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A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6161 LONDON: SATURDAY, SEPTEMBER 27, 1941 CCXLI

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ORIGINAL ARTICLES

HOME GUARD MEDICAL ARRANGEMENTS

A. LAWRENCE ABEL, M.S. Lond., F.R.C.S.
GROUP MEDICAL OFFICER, HOME GUARD

WE are reminded almost every day, and always by the Prime Minister when he speaks to us, that invasion of this island is a virtual certainty. That this will be carried out mainly by air-borne troops is almost equally certain. That these troops may land in considerable numbers and at several different points is shown by the experience of other countries. The landing of a large number of paratroops (120,000 fully equipped and armed men in six or eight widely separated districts is considered feasible) would be more likely to occur in isolated country districts than in the centre of a town. In town districts the already established, well-equipped and well-staffed A.R.P. and other medical services are capable of dealing with casualties among both civilians and Home Guard men, but both civilians and combatants in country districts might be quite cut off from such aid, both in the immediate vicinity of hostilities and perhaps for several miles around. My remarks therefore apply mainly to rural districts, though it must be borne in mind that even in towns severe damage may render even street to street communication impossible. In any case, in a town the hospitals and first-aid posts are usually conspicuous buildings and likely to be easy and early targets, and might soon be out of commission. Therefore peripheral casualty collecting posts with adequate cellars should not be neglected in urban districts.

It may be estimated that among any particular platoon of Home Guard men as many as 90% might be casualties within a few hours of the arrival of the air-borne force. Wise as it may be therefore to have a number of trained stretcher-bearers every member of the Home Guard should be taught as much first-aid as is possible in the small time at our disposal, in order that each man may be able to help his pal. It should be remembered that every member of the Home Guard, except a medical officer wearing a red cross brassard, is a combatant who has no Home Guard Medical Corps to come to his aid. Each Home Guardman therefore stands an equal chance of being wounded, and by the same token an equal chance of being called on to carry out first-aid for his friend.

The Home Guard Medical Service should be responsible for first-aid training and for treatment before hostilities. The former will result in reasonable care of the wounded at the time of injury. They should also be responsible for the establishment, staffing and equipping of casualty collecting posts in rural and sometimes urban districts, where A.R.P. or other facilities cannot be relied on. If both these functions are carried out it follows that arrangements will be organised for the transport of casualties from the battlefield to the collecting post, and for their care there for an indefinite period.

FIRST-AID TRAINING AND IMMUNISATION

Each commanding officer should arrange that his medical officer should be given every facility to impart, and that every man in his battalion should attend to receive, instruction in simple first-aid. This should be with special reference to the treatment of wounds, including fractures and hæmorrhage, of burns and of pain. Every man should be made to carry an 18 ft. by 3 in. roller bandage together with his first-field dressing, and should be taught how to improvise a splint from any handy piece of wood or fence. The plaster-of-paris slab technique should also be taught, though this will scarcely if ever be of value on the actual field. Every man should carry a thick piece of cord attached to his mackintosh-cape ground-sheet, and should be shown how to use the cord as a tourniquet, or failing that his roller bandage or first-field dressing. At present each man has only one field dressing and therefore cannot open it, and he cannot see what it is or learn how to apply it unless one man in the class sacrifices his dressing. In most instances it is the medical officer who has already done this, and he has now no sterile first-field dressing. No dressings have been issued for carrying on to the field for the adequate covering of burns, for this description can hardly apply to one or two small tubes of tannic-acid jelly, or to a small supply of anti-gas ointment. No morphia is included in the official issue.

Only a very small proportion of members of the Home Guard will be trained as stretcher-bearers, so that each man will have to help his friend as best he can, and after applying a dressing or tourniquet to the best of his ability with the meagre medical supplies at present available he must then hide him in a ditch or thicket and all comrades must be told where he is, or if several are wounded an unwounded man must be left behind to care for them until the heat of battle moves on. If by good chance a few stretcher-bearers happen to be where the casualties occur they will transfer them with all possible speed to the nearest available casualty collecting post. Otherwise two of the wounded man's friends will have to carry him when their combatant services can be spared. In the absence of a stretcher, a gate or hurdle, or even a stretcher improvised from two rifles and a greatcoat will have to suffice. In the event of only one man in a post being left unwounded, he will have to go to the nearest casualty collecting post where a stretcher must be available, and will take it back with him together with a civilian to bring in the wounded. If a farm cart or wheelbarrow can be obtained so much the better.

In addition to the subjects indicated, an elementary knowledge of which should be thoroughly instilled into each Home Guardman, he should also be given at least the same immunity treatment as is granted to regular troops. Main water-supply is likely to be damaged over a wide area, and well or pump water, already or rapidly contaminated, would have to be used. Every Home Guardman should be given an injection of T.A.B.T.C.—an injection which gives immunity from typhoid fever, both varieties of paratyphoid fever, tetanus and cholera. Since it is on members of the Home Guard that the first brunt of air-borne invasion will fall, they would be well advised to have this preventive treatment forthwith.

ESTABLISHMENT OF CASUALTY COLLECTING POSTS

The name "casualty collecting post," which was introduced by Dr. Gordon Ward, is self-explanatory, and is not to be confused with a regimental aid-post from which it differs in several respects. A Home Guard casualty collecting post may be either (*a*) a separate entity not associated with any other organisation, or (*b*) an already established A.R.P. first-aid post or point, E.M.S. hospital, R.A.M.C. unit, fever hospital, &c. The majority of such already existing arrangements are situated in or close to large towns, small towns or larger villages, and in these districts few Home Guard casualty collecting posts need be established. It is important, however, that members of the Home Guard operating in these areas should be fully aware of the position of such facilities and that their services are available for their use if wounded, equally with wounded non-combatants. Primary Home Guard casualty collecting posts will therefore usually be established in the more isolated or country districts.

Great Britain measures approximately 100,000 square miles, and to judge from my district about half the total area is already equipped via A.R.P., E.M.S. and R.A.M.C., leaving approximately half which has to be organised with collecting posts; so that some 50,000 posts are required. My posts have cost somewhat less than £10 each to equip (almost all raised voluntarily and mainly through the generosity of the Canadian Red Cross), and will probably reach that figure when we have sufficient palliasses, pillows and so on. Is half a million pounds spent once, and once only, for the medical care of Home Guard and other casualties a large sum out of a war expenditure of fourteen million pounds daily? Bear in mind that if invasion does not come to your district these goods will still be usable and of value, so that even the half million pounds will not be wasted.

In the county with which I am associated the object has been to arrange for a Home Guard casualty collecting post to be established at intervals of not more than one mile. To this scheme of ours the War Office has

given its full approval. From this it follows that no wounded man will have to walk, crawl or be carried more than half a mile, and will always have four available posts within a mile of him.* The suggestion has been made that every house in the neighbourhood of the battle could give shelter to a wounded man, but it follows that when it is possible for a medical man to reach the region he will have no idea where to go, nor will he find equipment available, nor will the best house or the one with the best cellar and most efficient local nurse be utilised. Collection will have been made before the roads become available for ambulances, and the idea we had in mind in forming these posts—to avoid casualties being scattered or lost, to have them already collected and in readiness for further transport with the least possible delay, to provide the maximum care and treatment until that happens—would be nullified. THE LANCET leader of Aug. 16 points out the difficulty of transmitting messages or aid. The idea which "H.G.M.O." puts forward (*Lancet*, 1941, **2**, 268), of a runner armed to the teeth with splints, dressings, bandages, tourniquets, morphia, anti-tetanus serum and tins of Vaseline gauze, scuttling in the darkness along unfrequented by-paths and beside treacherous hedgerows through the enemy-infested countryside, smelling out the wounded (probably the best way of finding 'em by that time), each in an isolated cottage, administering first-aid by candle light and coping with the frightened and unprepared inhabitants, and then hurrying on again unscathed through the night, would be laughable if it were not pathetic.

Selection of posts.—The battalion medical officer should be a local practitioner who knows his battalion area well. Not only does he know the suitability or otherwise of most of the houses in his district, but he also knows the inhabitants of those houses. A consideration of these two factors will lead him to choose his posts to the greatest advantage. From this it follows that municipal employees, who obviously lack this special knowledge, will be unlikely to choose the best posts. A private house or farmhouse or schoolroom or inn will be chosen because of its facilities of space, light, heat, water, if possible with adequate cellar accommodation. The latter is important, for if no cellars are available hand grenades may be thrown in at the window by the enemy and cause havoc among the wounded—not only the wounded Home Guardmen, but also wounded civilians who will have gathered there, and unwounded personnel who may be attending to them. If adequate cellar accommodation is available, care of the wounded may be carried on with much less interruption than will be likely in a groundfloor room. In addition, the suitability of the housewife and her associates for caring for the sick will be taken into consideration. The majority of our posts are fortunate in having the services of a nurse, ex-nurse or midwife, or someone who has had considerable, if not large, nursing experience. Great help in the selection of posts has been given by the company medical officers, many of whom are practitioners who know their own district intimately.

Label.—A large notice with the letters H.G. and a red cross should be exhibited in a conspicuous position outside each Home Guard casualty collecting post. A list of posts should be in each company and battalion headquarters, and commanding officers and platoon officers should make certain that all ranks are aware of their nearest casualty collecting posts.

EQUIPMENT OF POSTS

If each post is well chosen simple equipment will already be found there—bowls, towels, soap and water, and a bottle of antiseptic (the latter is probably quite unnecessary, but tradition dies hard, and the lay first-aider seems lost without something that smells of carbolic or colours the water). More important equipment is not so easy to come by. In addition to the meagre army supply to the Home Guard, we have aimed at having the following in each casualty collecting post, and have obtained voluntary help to provide nearly all of it: 10–15 roller bandages (3 in. or 4 in.); 5–10 T-bandages; 15–20 triangular bandages. Adequate supplies of these types of bandages are apparently in the country. The great difficulty appears to be to get the local Red Cross for a county or district to realise that they are of no value in a central depot, which might be quite cut off from the wounded needing them in time of invasion, and that they had better be dispersed in small numbers to equip four posts to every square mile of the country. If this cannot be done, local ladies' sewing parties, Church sewing parties and Women's Voluntary Services must be approached, and it has been found that the local medical man seldom has difficulty in obtaining an adequate supply from these generous and ardent sources at short notice.

I agree with Mr. V. B. Green-Armitage (*Lancet*, 1941, **2**, 230) that it is unfair that medical officers of battalions should go round cap in hand asking for donations, but since neither the state nor the British Red Cross, with all their voluntary supplies from the American Red Cross, will do much to help us other funds must be obtained. I suggest that the medical officer in his lectures should appeal to all members of the Home Guard that the urgent medical necessities are for each and every man's use, and that donations should be blatantly asked for both from Home Guard themselves and those whom they are about to defend. In my experience it is almost useless to approach any established organisation for supplies; the Red Cross has become so exsanguinated by red tape as to be almost invisible on its white background. Of course every platoon of every company of every battalion should be provided with urgent medical necessities, but where is the Houdini who can rescue us from the red-tape entanglements?

Fresh clothing.—Many of the casualties reporting at a Home Guard collecting post will be wet or have their clothing ruined by mud, blood or rending. We have therefore aimed at having two or three pairs of pyjamas, two or three pneumonia jackets, three or four bed gowns and five or six pairs of socks available at each post. These will sometimes be voluntarily loaned by the owner of the house in which the post is situated, or the lady of the house herself may collect from her friends such articles which would usually go to the jumble sale. Thus an adequate supply will always be available.

Bedding.—In the type of house we have indicated five or six blankets will almost always be available for the wounded, but in addition to those we have also provided five or six blankets for each post by voluntary effort from outside sources. It is therefore worth while appealing to local voluntary effort for the loan or donation of blankets so that each post has a few for the sole use of casualties. Each such loaned blanket can be labelled with the owner's name and address, and claimed and returned when no longer required. Very few posts have the means of providing beds or mattresses for 10–20 wounded men, let alone wounded women and children who are also likely to forgather there, and although there is little doubt that the ordinary occupiers of a house will have no time to sleep in their own beds when casualties begin to arrive, yet some extra provision than their own mattresses should be made available for the wounded. A house-to-house collection of old sheets must be made, and local voluntary sewing parties must sew them into sacks (7–8 ft. long by 2 ft. 6 in. wide), and they must be stuffed with dry straw, bracken, chaff or rags, and kept in a dry place. From the odd pieces of cotton or linen which are left over pillows must be made and stuffed with dry grass.

Food.—The local controller should be approached immediately and a tinned supply of iron ration provided for each post and kept hidden.

Drugs.—Each of my posts has ten grains of morphine supplied as 30 tablets, each containing gr. ¼, for placing under the tongue, a small bottle with gauze cover and screw-on cap containing an ounce of sulphanilamide powder, and a sterile tin with 9 ft. by 6 in. Vaseline gauze. These are kept under lock and key. Most of my equipment has been provided by the C.R.C., but local friends have paid for most of the drugs, which have been supplied at most reasonable prices by Messrs. John Bell and Croyden.

Light.—A supply of candles should be kept near the dressings, but a hurricane lamp would be better.

Instructions.—Simple printed instructions should be given with each parcel or packing case of Home Guard dressings. The following (slightly modified) were drawn up by Dr. J. W. Cannon, and printed and distributed by him.

* I should like to record the valuable and energetic work carried out in this connexion by Dr. H. Stratford Collins, Dr. J. W. Cannon and Dr. R. G. Birch.

FIRST-AID TREATMENT OF THE WOUNDED

Relieve pain.—Handle and transport the patient carefully. Make the patient comfortable. In the case of chest or abdominal wounds place in a half-sitting position. If pain is severe place one tablet (½rd grain) of morphine under the tongue (the tablet is absorbed there and is not swallowed). A second dose may be given if necessary in half an hour. No further dose should be given for about 4 hours.

The wound.—1. Arrest hæmorrhage by firm pressure bandaging over a dry ("first-aid") dressing. This method is nearly always effective, though finger pressure over the artery or even a tourniquet may be necessary. 2. Sprinkle sulphanilamide powder freely on the wound. 3. Apply a dry ("first-aid") dressing and a bandage. (Splint severe wounds of the limbs.)

Burns (not applicable to effects of blister gas).—1. Sprinkle sulphanilamide powder freely on the burnt area. 2. Cover the burnt area with Vaseline gauze. 3. Cover with a layer of cotton-wool. 4. Apply a bandage.

Fractures of the limbs should be splinted immediately ("splint 'em where they lie") to secure immobility of the fractured bone and limb. Treat any wound as described above.

Provide warmth.—Replace wet and dirty clothes with dry ones. Protect from cold by blankets under as well as over the patient.

Keep the room warm and the bed heated by hot-water bottles or hot bricks covered with flannel. Raise the foot of the bed or stretcher on blocks about 12 in. high.

Give fluids (except in the case of abdominal wounds).—Water or any beverage. Hot sweetened tea or coffee is best. Add half a teaspoonful of common salt to each pint of fluid. Insist on fluids being taken.

Clearness of vision and adequate preparation *now* will lead to the saving of life and suffering amongst Home Guardmen. Our posts thus prepared and equipped will not only serve to hearten the combatants but will help to stabilise the civilian population in any area attacked. Let us therefore carry out the War Office instructions; let us do the job thoroughly, but let us do it now.

MIDDLE-CLASS DIETS IN PEACE AND WAR

E. M. WIDDOWSON, B.SC., PH.D. B. K. ALINGTON, B.A.

(*Department of Medicine, Cambridge*)

DURING the first four months of the war McCance and Widdowson carried out an experimental study of rationing. Eight people were given a diet in which fat, meat, bacon, sugar, jam and milk were more severely restricted than they are at the present time, but in which bread, potatoes and other vegetables were freely available. They showed that healthy active people did not allow these restrictions permanently to curtail their calorie intakes. More and more bread and potatoes were eaten, until the calories were as high as they had been before the restrictions were imposed. McCance and Widdowson predicted that if rationing became widespread and severe the demand for bread and potatoes would increase, and that, if most other foods were rationed, a forecast could be made of what those increases would be. They also found that the appetising and tasty functions of the rationed foods tended to be replaced by the judicious use of other unrationed flavourings. They emphasised the value of adjuvants such as onions, curry and chutneys to restricted diets. They established a general principle which seems to underlie all systems of rationing—that as one food becomes scarce it tends to be replaced by another. This applies both to foods which are of calorific value and to foods which are eaten especially for some piquant flavour.

In March, 1941, foodstuffs could be divided into three categories. There were those that were officially rationed. These included butter, margarine and cooking fat, cheese, meat, bacon, jam and tea. There were those which were officially unrationed, but were difficult to obtain, or very expensive, or both. Fruit, fish, sausages and "cooked meat," cakes, biscuits, sweets and chocolate fell into this group. Milk was officially restricted to ⅔ of its previous level, and eggs were readily available only for one or two weeks. Lastly, there were some foods such as bread and potatoes which were plentiful and cheap. Green vegetables and carrots were also fairly abundant. By the spring of this year, therefore, it was evident that 18 months of war must have forced many people to alter their established dietary practices, and it seemed very desirable to have some information on these matters. To what extent were the rations really restrictions? Was the apparent scarcity of an unrationed food due to increased demand or to decreased supply? If the consumption of some commodities was curtailed, were people eating less food, or were they turning to other, more plentiful foods?

TABLE I—COMPARISON OF GROUPS OF WOMEN INVESTIGATED IN 1935 AND 1941

	1935	1941
Number of women	63	57
Average age in years	32·5	39
Average weight in lb. (indoor clothes and shoes)	135	130·3
Average height in ins. (no shoes)	64·1	63·7
Occupations—		
Housewives	17	27
Students	15	10
Secretaries, clerks, &c.	11	2
Teachers	7	6
Research workers	3	7
Miscellaneous	10	5
Living in large towns or cities	57	47
Living in small towns	4	4
Living in country	2	6

In 1935 Widdowson, and Widdowson and McCance carried out dietary surveys by the individual method on 63 men and 63 women of the English middle class. Records were obtained of the diet of each of these persons over a period of one week. By re-analysing this data it has been possible to compare the food eaten in 1935 with the rations in 1941. Further, by making another dietary survey in the spring of 1941 it has been possible to get some insight into all the dietary changes which had taken place. The 1941 survey was carried out on 57 individual women, who were chosen to be as similar as possible to those in the original investigations. Relevant details are given in table I. The same method was used as before, and need not be described again. This survey was made during March, April, and May, 1941. The original one was carried out during the period November, 1934–July, 1935. Seven of the subjects who took part in the first investigation also participated in the second.

Both these surveys on women have been limited to a particular social class because naturally no comparison would have been valid unless the two groups were similar. Further, some of the results may not be true of the country as a whole. Many of the findings, however, are certainly of general application. One other point: the 1935 survey was carried out 4½ years before the outbreak of war. An increase in the popularity of a foodstuff between 1935 and 1939 may have masked a decrease in consumption due to war-time restrictions.

RATIONED FOODS

Table II shows the rations in force in spring 1941, and the quantities of the rationed foods eaten by the men and women in the 1935 survey. It also shows the amounts eaten by the women in the 1941 survey. Certain assumptions have had to be made in compiling this data from the dietary records, particularly as regards cooked dishes. As a general ruling it has been assumed that all puddings, stewed fruit and savoury dishes were prepared at home out of raw ingredients, but that cakes, biscuits and tinned fruit were purchased as such. Allowance has been made for the fact that recipes demanding less fat and sugar were being used in the 1941 survey.

It will be seen that the rationing system must have cut right across the dietary habits of the men. The women, at any rate of this particular social group, have been much less affected because they were not in the habit of eating so much of the rationed foods before the war. Nevertheless, the ration of almost every commodity, for women as well as men, was less than their prewar intake.

TABLE II—AVERAGE INTAKES OF RATIONED FOODS IN 1935 AND 1941 COMPARED WITH RATIONS IN SPRING 1941 (OZ. PER WEEK)

	1935		1941	
	Men	Women	Women	Ration
Butter	11·7	9·8	3·7	4
Cheese	4·9	2·9	1·3	1
Sugar	16·7	7·4	4·5	8
Jam	5·7	4	5·8	2
Rationed meat (raw weight)	34·5	19·7	11·4	about 12 (1s. worth)
Bacon (raw weight)	10·2	4·4	3·9	4

Figs. 1–3 show the frequency with which different amounts of the rationed foods were eaten. The hatched portion represents intakes within the ration.

Fat.—In spring 1941 the total fat ration was 8 oz. a week. Of this, 4 oz. could be purchased as butter, 2 oz. as margarine, and 2 oz. as lard or lard substitute. If the customer preferred, she could replace part or all of the butter or lard with margarine. Suet and dripping were not rationed. It has been found impossible to arrive at any accurate figure for the amount of rationed cooking fat used by the women taking part in these surveys. There was no way of telling what proportion of the cakes and biscuits had been home-made, and even if it was assumed that they had all been bought in shops there was still no clue as to whether puddings had been made with rationed or unrationed cooking fat. Taking all types of cooking fat into account the women's consumption averaged about 5 oz. per week in 1935 and the same amount in 1941. The amount of butter used with bread was stated on the records, so this can be given with some measure of confidence. Both men and women in the 1935 survey were eating an average of 2–3 times as much butter as they were allowed in spring 1941. Only 6 of the men and 4 of the women ate 4 oz. a week or less. More than half the men were eating 8–16 oz. and ¾ of the women between 4 and 12 oz. In the 1941 survey the average amount eaten was very close to the ration; 44 of the women were eating less and 13 more than their rightful allowance. In the 1941 survey 25 of the women ate margarine on bread and the average amount eaten in this way was 1 oz. a week; nobody ate margarine on bread in the prewar study.

Cheese.—All cheese used in cooked dishes is included under this heading. In the 1935 survey the amounts of cheese eaten by the individuals varied widely; 5 men and 11 women ate none; 5 men and 1 woman ate more than 12 oz. during the week. The men's intakes averaged 5 oz. and the women's 3 oz. a week. A weekly ration of 1 oz. became operative in May, 1941, when the second survey was nearly over, so only a small proportion of the women taking part in this investigation were affected by it. Cheese had, however, been difficult to obtain before official rationing began, and the average amount eaten in the 1941 survey was very little more than 1 oz. a week; 33 of the women ate amounts that were within this ration; 12 ate none at all.

Sugar and jam.—The 1941 jam ration of 2 oz. a week would have sufficed for about a third of the men and women in the 1935 survey, but the average consumption at that time was 2–3 times the official ration of 1941. Surprising though it may sound, 50 out of the 57 women in the 1941 survey were exceeding their ration of jam, and their average consumption was nearly 3 times their official allowance. They could only have managed this if they had had stores of jam laid by. The desire for jam might have been expected from McCance and Widdowson's experimental study of rationing. The people in that investigation had an all-in allowance of 5 oz. of sugar per week. They always chose to have the whole of it issued to them in the form of jam, which they spread out thinly over large quantities of bread. In spring 1941 conditions were not nearly so stringent as the experimental ones, but butter was relatively scarce, as were many of the other relishes so easily obtained before the war. Hence the women in the 1941 survey felt the need for jam, and they drew on their reserves to satisfy it. What are they going to do when their stocks are exhausted? Some will adopt alternative flavouring agents, but the figures for sugar suggest that many will continue to eat jam.

In spring 1941 the women were eating an average of little more than half their sugar ration, taking into account sugar in stewed and home-bottled fruit and puddings as well as sugar recorded as such. Only 4 women ate more than 8 oz. a week from these sources. A reserve of sugar was evidently being built up for jam-making in the 1941 fruit season. Of course, the men in the household may have been eating some of the women's sugar ration. In the 1935 survey, before any rationing was imposed, the men ate 2–3 times as much sugar as the women, and it seems likely that they may now be getting the lion's share of the family ration.

It must be remembered, however, that there are several foods in everyday use, other than those already mentioned, which contain commercial cane sugar. These are usually purchased ready made, and hence the sugar they contain is an extra to the official ration. Cakes and biscuits contributed about 3 oz. of sugar a week to the 1935 and 2·5 oz. to the 1941 diets. Tinned fruit contributed 0·2 oz. on both occasions. Jam provided 2·7 oz. in 1935 and 3·9 oz. in 1941. Sweets and chocolates contributed 2·6 and 1·3 oz. in the 1935 and 1941 surveys respectively. Hence, taking all sources into account, the women were eating about 15·9 oz. of cane sugar a week in 1935 and 12·4 oz. in 1941. This figure will fall to 10·9 oz. when the stocks of jam are exhausted and the women are reduced to their jam and sugar rations.

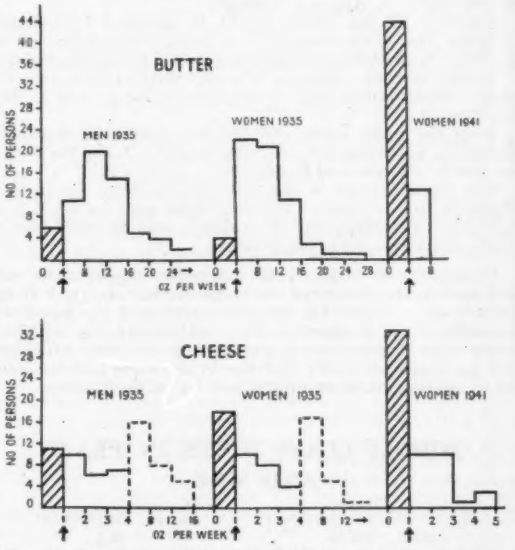

FIG. 1—Frequency distribution of butter and cheese intakes. Arrows indicate ration in spring 1941 and shaded areas intakes within that ration.

Meat.—The figures for meat include all meat that was rationed in March, 1941—i.e., all butcher's meat and offal, but not poultry, rabbits, sausages, ham or "cooked meat" in pies, &c. Only 2 out of the 63 men in the 1935 survey were within their 1941 meat ration. Most of them were eating between 12 and 36 oz. a week, and 22 of them recorded more than 36 oz. Their average intake was about 3 times as much as their ration in 1941. The women in 1935 ate little more than half as much meat as the men; this, however, was considerably more than their 1941 allowance. The average intake in 1941 was 11·4 oz. and the maximum 23 oz. In 1935, 17 of the women were eating more than the latter amount.

Bacon.—The rationing of bacon to 4 oz. a week hardly seems to have affected women's consumption of this food, for in the 1935 survey they were eating little more than this amount, and not much less in 1941. For men, however, this ration was more of a privation; it must have reduced their intake to two-fifths of its prewar level.

RESTRICTED FOODS

By comparing the data obtained from the surveys of 1935 and 1941 it has been possible to gain some idea as to how far the difficulty of procuring some foods has affected their consumption.

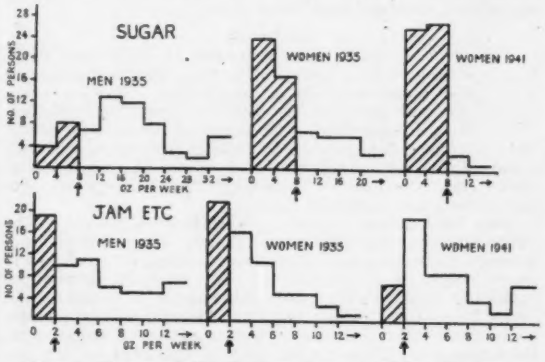

FIG. 2—Frequency distribution of sugar and jam intakes.

Fruit.—Table III shows that in 1935 the women were eating an average of 29·1 oz. of raw fruit a week, or over 4 oz. a day. Apples and pears made up half of this, oranges and bananas the remainder. Of course small amounts of other fruits were also eaten. Tomatoes are not included here as they have been given separately. Of the 63 women 3 ate no raw fruit of any kind during the week of investigation. In spring 1941 raw fruit had almost disappeared from the market. Then, 6 women ate apple, one of them 15 oz.; one woman had a little orange in a jelly; 50 had no raw fruit at all, and the per-caput consumption was a mere 0·6 oz.

The rise in consumption of so-called cooked fruit, with which is included home-bottled fruit, may sound surprising. It is due to several causes. First, the 1941 survey was carried out at the height of the rhubarb season, and this garden product accounted for over half the "stewed fruit." Second, it is probable that more fruit was bottled at home in 1940 than in the prewar years. Third, a consignment of dried apple rings from Canada during the winter 1940–41 provided fruit for cooking during the early months of 1941. Fourth, the provision of puddings is now a problem for the housewife. She tends to turn more frequently to stewed fruit, which, with the aid of saccharin and sodium bicarbonate, she can prepare with a minimum of sugar.

The consumption of tinned fruit was much the same in 1941 as it had been in 1935. One woman, who ate 36 oz. in the week, has been excluded from the 1941 average. About a third of the women in the 1935 survey and a quarter of them in 1941 had some tinned fruit. The restriction in supplies of dried fruit (raisins, sultanas, currants, dates) in 1941 is not very obvious from table III. One woman in the 1935 group, who ate 18 oz. dates during the week, has been excluded from the average.

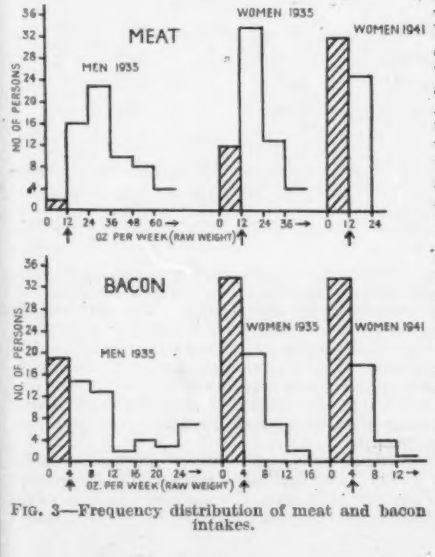

FIG. 3—Frequency distribution of meat and bacon intakes.

Only one woman ate any tomato in the 1941 survey, and she had a very small amount. In 1935 the intakes averaged nearly 5 oz. a week, and ranged from none to 38 oz. Neither survey covered the season when raw salads were abundant, and the intakes were equally low in 1935 and 1941.

Meat.—The average consumption of unrationed meat fell, as indeed would be expected. On both occasions it consisted chiefly of sausages and meat bought ready cooked. Allowance has been made for the smaller amount of meat in war-time sausages.

Fish.—In 1941 the average intake of fresh and dried fish was less than half what it had been in 1935. Increased price was probably the chief reason for this. Supplies were undoubtedly less, but the greater cost led to a decreased demand. Hence there was not much apparent shortage. Of the women in 1941, 30 partook of some form of tinned fish, the supplies of which were still ample at that time. In 1935, when other foods were cheap and easy to obtain, only 12 of the women seem to have been attracted by this kind of fish and the per-caput consumption was only ¼ as great.

Eggs.—Both the 1935 and 1941 surveys covered the season of the year when eggs were relatively plentiful. Although the number of eggs eaten was less in the 1941 survey, there is no doubt that the difference would have been much greater had the survey been made at another season of the year. Before the war there were plentiful supplies of imported eggs during the winter months.

TABLE III—AVERAGE INTAKES OF RESTRICTED FOODS IN 1935 AND 1941 (OZ. PER WEEK)

		Women 1935	Women 1941
Fruit	raw	29·1	0·6
	cooked (excluding sugar)	7·5	11·4
	tinned	1·7	1·5
	dried	1·1	0·8
Tomato, raw and cooked		4·9	0
Raw salad (excluding tomato)		2·5	2·5
Unrationed meat (raw weight)		7·4	4·7
Fish	fresh and dried (raw weight)	9·3	4·0
	tinned	0·4	1·1
Eggs (number)		4·2	3·2
Cream		1·7	0
Cake		11·5	11·7
Biscuits		3·2	5·0
Sweets and chocolates		3·9	1·9
Milk (pints)		3·3	4·6

Cream.—In the 1935 survey more than two-thirds of the women had some cream during the week of investigation, and the average consumption was 1·7 oz. a week. In 1941 the sale of fresh cream was prohibited; 3 of the women entered small amounts of cream on their records, but in each case it came out of a tin.

Confectionery.—The figures for cakes and biscuits justify rather more comment. In spite of the apparent scarcity of cake and biscuits in the shops, the average consumption of cake was the same in 1941 as it had been in 1935, and the intake of biscuits had increased. The proportion of the cake which was home-made was likely to have been higher in 1935, when there were no restrictions on fat, sugar and eggs. Now the housewife cannot make cake as she formerly did, and she tries to buy it ready made. Hence, the apparent scarcity is probably partly due to an increased demand. The same applies to biscuits. People who never bought biscuits before are undoubtedly buying them now. As shopping becomes more difficult the housewife is only too glad to be able to get biscuits to make up for the fruit and sweets that she cannot now obtain. These results are consistent with the fact that there has been an appreciable increase in the manufacture of cakes and biscuits since the prewar period, in spite of reduced allocations of fat and sugar. The only biscuits now being made are the plainer varieties.

The amount of sweets and chocolates eaten was about half as much in the 1941 survey as it had been in 1935; 14 of the 1935 group and 20 of those taking part in the

1941 survey ate no sweets or chocolates during the experimental week.

Milk has been included among the restricted foods, although the restrictions in supplies did not come into force until half way through the 1941 experiment. The figures include the milk used for making puddings and other cooked dishes, as well as that taken in liquid form. It will be seen that the average amount of milk consumed was nearly 50% higher in 1941 than in 1935. This higher consumption was not due to more milk puddings being eaten, but to larger quantities of milk being drunk as such, or taken in tea or other beverages. The "drink more milk" campaign, which was carried out between the time of the first survey and the outbreak of war, evidently caused such an increase in the demand for milk that even after retail distribution had been cut by ¼ consumption was still 50% above what it had been six years previously.

TABLE IV—AVERAGE INTAKES OF PLENTIFUL FOODS IN 1935 AND 1941 (OZ. PER WEEK)

	Women 1935	Women 1941
Bread	35·2	45·6
Flour in puddings and savoury dishes	3·9	5·1
Oatmeal	0·5	1·6
Rice	0·5	1
Proprietary cereals	0·8	1·4
Other cereals (cornflour, &c.)	0·4	0·7
Potatoes, cooked	21·1	33
Green vegetables, cooked	9·2	13·9
Root vegetables, cooked	4·7	7·4
Legumes, cooked	2·8	2·4

PLENTIFUL FOODS

It is clear from the results already discussed that people were eating smaller amounts of a great many foods in March, 1941, than they had been before the war. The general principle of rationing already enumerated states that there should have been a corresponding increase in the consumption of others. Table IV shows that this was indeed the case, for in the 1941 survey the women were eating more bread, more flour, more rice and much more oatmeal than their opposite numbers in 1935. These changes in rice and oatmeal were brought about in two ways. More people ate them, and those who did eat them ate more of them. Thus, in 1935, 14 women ate porridge, and had on average 2·2 oz. oatmeal each. In 1941, 27 women recorded porridge, and ate 3·5 oz. per head. Rice was chiefly eaten in rice pudding. In 1935, 30 mentioned this cereal. In 1941, the number had risen to 45.

"Proprietary cereals" include bread substitutes such as Ryvita, as well as breakfast cereals. In spite of an apparent shortage, the average intake of these foods increased. Several reasons may be suggested for this. During the years 1935–39 proprietary breakfast cereals may have become more popular. Although more was being eaten in 1941 than in 1935, it may well have been less than the amount eaten in 1939. Further, the scarcity of materials for breakfast dishes such as eggs, tomatoes and fruit had led to an increased demand for porridge and other cereal foods; 26 of the women ate one or other of the proprietary cereals during their week of weighing in 1941 as against 15 in 1935.

"Other cereals" consists chiefly of custard powder, and this figure also showed an increase.

Turning now to the vegetables, potatoes were being eaten in somewhat larger amounts in the 1941 survey. In 1935 the average consumption was 3 oz. a day. In spring 1941 it had risen to 4·7 oz. It is evident, however, that women of this social class have not yet become potato-conscious. Potatoes provide more calories to the acre than any other food, and they can readily be grown in this country. When imports are restricted, as they are at the present time, this vegetable ought to provide us with more than 6% of our calories. One person in the 1941 survey ate 300 oz. during the week, or 43 oz. a day! She was excluded in calculating the average. She ate them at three meals every day, and she obtained 49% of her calories in this form. The consumption of cooked green and root vegetables had also increased. All but 2 of the women on both occasions recorded some sort of green vegetable; 19 of the women in 1935 and 7 of those in 1941 ate no root vegetable of any kind. Legumes consisted chiefly of dried haricot and butter beans, baked beans and tinned peas. There was no significant change in consumption.

CALORIES

The average daily calorie intake in 1935 was 2187, with a standard deviation of 388. In 1941 the mean was 2137, with a standard deviation of 420. These average figures are not significantly different from one another. Thus, the principle held. Deprived of the calories which they had been accustomed to getting from their rationed foods, appetite and instinct had driven these women to make good the loss by increasing their consumption of unrationed and plentiful foods.

This 1941 dietary survey was limited to women. The 1935 surveys demonstrated clearly that before any restrictions were imposed men were eating more of nearly every type of foodstuff. In the present system of rationing men get the same allowances as women. In order to maintain their calories, therefore, they require to increase their intakes of the unrationed foods more than women. Thus, at the time of the 1941 survey the rationed foods provided about 600 calories a day. The men taking part in the 1935 survey were obtaining about 1400 calories a day from the foods that are now rationed. The women derived 850 calories a day from this source. Hence, the men would have had to find 800 calories a day from unrationed sources, and the women 250 calories. In terms of food, the men would have to eat another 11 oz. bread or 32 oz. potato a day to make good this deficit. The women required 3½ oz. bread or 10 oz. potato. Actually, the women's potato and bread intakes had risen by less than these amounts, for they had also increased their consumption of oatmeal and other foods of this kind.

CHEMICAL COMPOSITION OF THE DIETS

Table V shows the calorific values and chemical composition of the diets in 1935 and 1941. McCance and Widdowson's (1940) tables of the composition of foods were used for the calculations. It will be seen that, although the total calories were much the same, their distribution between fat and carbohydrate had altered considerably. Relatively more carbohydrate and less fat were being eaten in spring 1941. The differences in both cases are statistically significant. The amount of total protein, as always, remained remarkably constant. The figure for animal protein, however, showed a significant reduction because of the smaller amounts of meat, fish and cheese which were available in 1941. In the 1941 survey only 4 people recorded any alcoholic drink and the amounts were too small to affect the average calories of the group.

TABLE V—CHEMICAL COMPOSITION OF THE DAILY DIETS

—	1935		1941	
	Average	Standard deviation	Average	Standard deviation
Calories	2187	388	2137	420
Total protein (g.)	67·3	12·4	64	12
Animal protein (g.)	46	11·3	33·8	8·4
Fat (g.)	100·5	20·6	78·4	16
Carbohydrate (g.)	233	58·5	280	67
Calories from protein (per cent.)	12·8	..	12·2	..
Calories from fat (per cent.)	42·7	..	34·1	..
Calories from carbohydrate (per cent.)	43·6	..	53·7	..
Calcium (g.)	0·63	0·16	0·77	0·25
Phosphorus (g)	1·13	0·25	1·14	0·29
Total iron (mg.)	11·4	2·50	12·2	2·68
Inorganic iron (mg.)	7·9	1·64	9·2	2·34

The calcium intake was significantly higher in 1941 than it was in 1935. The increased intake of milk almost exactly accounts for this, and the decrease in the consumption of cheese has been made good by an increased

consumption of green vegetables. The amounts of phosphorus in the diets were almost identical in the two surveys. Both total and inorganic iron were higher in the war-time dietaries. The iron acquired from the increased bread and vegetables more than made up for the iron sacrificed by the shortage of meat.

VITAMIN C

The question has often arisen as to whether the war-time dietary is deficient in vitamin C. To obtain some information on this point the vitamin C intakes of the individual women have been calculated as accurately as possible from the 1935 and 1941 records. The most reliable figures which are available for the vitamin C in raw and cooked fruit and vegetables were kindly supplied by Miss M. Olliver. A sliding scale was adopted for potatoes, since it has been shown that the vitamin C in this vegetable varies greatly from one time of year to another. Table VI shows the results. The amount of the vitamin C derived from various sources on the two occasions is also shown. It will be seen at once that the average intake in 1941 was only half what it had been in 1935.

In 1935 fruit supplied ten times as much vitamin C as it did in 1941, and the women in the first survey got

TABLE VI—AVERAGE VITAMIN-C INTAKES (MG. PER DAY)

Source	Women 1935	Women 1941
Fruit	37·5	2·8
Vegetables	15·6	19·4
Jam and marmalade	1·5	1·5
Milk	2·4	3·2
Total from all sources	57	26·9
Maximum	140	85·2
Minimum	10·2	7·7
Standard deviation	31	9·4

more from this source alone than those in the second obtained from the whole of their diet. The amounts provided by vegetables and milk were a little higher in 1941, due to an increased consumption of these foods. Jam provided the same amount on the two occasions in spite of the increased consumption of this food. This was because the vitamin C in jam varies widely according to the fruit from which it is made. In 1935 more black-currant jam, rich in C, was eaten.

Fig. 4 shows the frequency distribution of the vitamin C intakes. It will be seen that in 1935 9 women were having less than 25 mg. a day, 39 between 25 and 75 mg., and 15 more than 75 mg. In 1941 26 out of 57 women had less than 25 mg., and only one had more than 75 mg.; this was the woman who ate 300 oz. of potato during the week, and she derived 43 mg. of ascorbic acid a day from this source alone.

The Technical Commission (1938) suggested that the vitamin C requirement of adults was covered by 30 mg. of ascorbic acid daily. The present results suggest that this is true, but that very much smaller amounts will suffice, for in the 1941 survey 41 women were having less than 30 mg. a day, and had probably been having so for 3-6 months. There were, moreover, no manifest signs of scurvy among them, nor indeed have there been any reports of scurvy, even among sections of the community less privileged than the women here investigated. Fox (1940) also came to the conclusion that the vitamin C requirement was much less than others (Harris 1939, Bacharach 1940) have supposed.

The vitamin C intake in war-time must be expected to vary from one season to another, as it has ceased to do in peace-time. This survey was carried out in the lean season. There was no fresh fruit, or raw vegetable salads, and even potatoes were at their lowest ebb. No doubt the intakes would have been much higher in the summer and autumn.

SUMMARY

The records of a dietary survey carried out in 1935 on 63 men and 63 women of the English middle class have been re-analysed. At that time the men were eating an average of twice as much sugar and bacon, three times as much meat, butter and jam, and five times as much cheese, as the rations allowed them in spring 1941. The women were eating less of these foods, but the quantities of all of them except sugar exceeded their rations in spring 1941.

An individual dietary survey was carried out in spring 1941 on 57 women of a similar social class. They were found to be eating much less raw fruit, and less unrationed meat, fish and sweets and chocolates than the women surveyed in 1935. Milk, bread and other cereal foods, potatoes and other vegetables were being consumed in larger amounts in the 1941 survey.

The women in the 1941 survey had maintained their calories at their prewar level by substituting unrationed carbohydrate for rationed fat. Their protein and phosphorus intakes were unchanged, their calcium and iron intakes were higher than they had been in 1935. The amount of animal protein was less in the war-time dietary.

The average vitamin-C intake in 1935 was 57 mg. a day, and 27 mg. in 1941. This decrease was due entirely to the disappearance of raw fruit from the market. Three-quarters of the women in the 1941 survey were having less than 30 mg. a day.

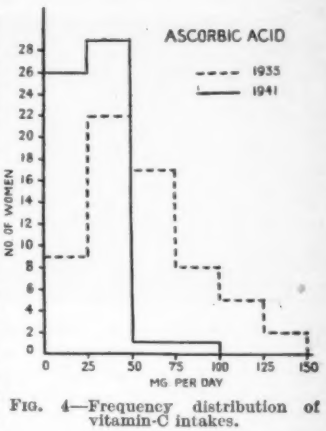

FIG. 4—Frequency distribution of vitamin-C intakes.

We are grateful to all those who have participated in this investigation by weighing their food. We wish to thank Dr. R. A. McCance for his advice and assistance in the preparation of the results for publication. We are indebted to the Medical Research Council for grants and expenses.

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SNEEZING AND THE SPREAD OF INFECTION

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RECENT developments in flash photography [1] have increased our knowledge of the particles projected in human sneezing to a point which justifies some practical conclusions as to the best methods of preventing infection from sneezes. American workers [2] have shown that in an ordinary sneeze many thousands of droplets are projected at an initial velocity which may occasionally be as high as 150 ft. per sec., and that most of these droplets come from the mouth. Our own studies have given similar results in many instances, and have shown further points as follows.

Sources of spray.—While in most photographs the

1. Edgerton, H. E., Germeshausen, K. J. and Grier, H. E. *J. appl. Physics*, 1937, **8**, 2.
2. Jennison, M. W. *Sci. Mon. N.Y.* 1941, **52**, 24.

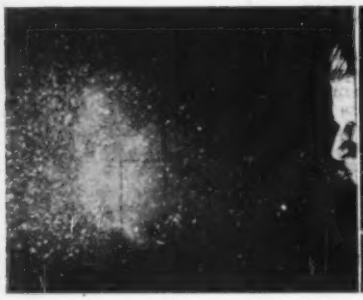


FIG. 1—Discharge chiefly from mouth.

FIG. 2—Discharge from both mouth and nose.

FIG. 3—Discharge from nose only.

majority of the droplets come from the mouth as in fig. 1, in some cases a purely nasal discharge is seen as in fig. 3, and in others a mixed oral and nasal discharge is seen as in fig. 2. In this photograph it is evident that the nasal discharge is being blown forward by the air stream from the mouth, and so goes forwards rather than downwards. It is evidently not justifiable to conclude, as has been suggested, that nasal discharges are unimportant in ordinary sneezes.

Size of droplets varies greatly in different sneezes. Tightly closed teeth or lips and high expiratory pressure give a fine spray as in fig. 1. Open jaws and lips and moderated expiration give relatively few large drops as in fig. 4. Thus a sneeze with open mouth is probably less dangerous to other people, owing to the rapid fall to the ground of large drops, as well as being safer for the subject, owing to the reduced pressure in nose and throat. Strings of mucus are common, as seen in fig. 5. Fig. 6* shows the remarkable appearance of the droplets when photographed while in motion. The pointed outline of the faster moving droplets is possibly an artefact.

FIG. 4—Teeth open, pressure low. Large drops with few small ones.

FIG. 5—Strings of mucus are common.

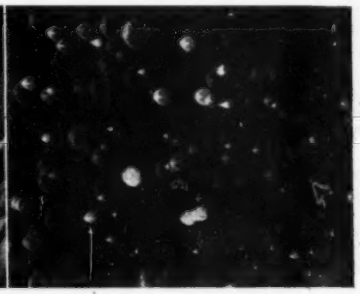


FIG. 6—Part of fig. 2 enlarged to two-thirds life size.

Distance projected.—In a vigorous sneeze very large numbers of droplets will hit a vertical plate 3 ft. distant from, and a few inches lower than, the subject's mouth. A small number of large droplets reach a plate 5 ft. distant and 1–1½ ft. below the subject's mouth. The range of danger from direct projectile infection is not less than 4 ft. but will rarely exceed 6 ft. for a person at the same height as the sneeze.

Infectivity of spray.—Fig. 7 shows a culture plate of 9 in. diameter which was placed vertically in the path of the sneeze shown in fig. 1, at a distance of 3 ft. from the subject's nose. The subject was in good health and free from cold (in August), but the serum-agar plate after 14 hours incubation showed over 19,000 colonies. These colonies came from at least 19,000 separate droplets, and no attempt was made to estimate the number of bacteria per droplet. While in this case the bacteria are mostly harmless ones from the front of the mouth, it is clear that very many of the droplets in a sneeze do contain living bacteria. It seems reasonable to infer that in acute infections of the upper respiratory tract droplets from sneezes are highly infective.

Presence of droplet nuclei.—Tests have been made with a subject sneezing in a small closed room of 800 cu. ft. capacity, with floor and table oiled as a precaution against dust. Culture plates of 9 in. diameter were exposed on a table 5 ft. from a subject who sneezed twice. On one plate uncovered only for the 20 min. period from 10 to 30 min. after the sneezes no less than 493 colonies grew. A similar plate exposed for 15 min. in a control test without the sneezes showed only 5 colonies. A series of tests of this type have shown conclusively that a large number of the bacteria-carrying particles from a sneeze are small enough to remain suspended for

FIG. 8—A sneeze well covered with an ordinary handkerchief.

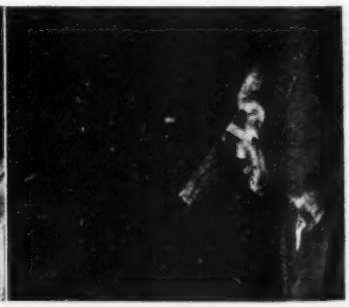


FIG. 10—A sneeze into a cheap mask. Note three droplets only escaping downwards.

* The enlargement is such that the subject's head if included would be two-thirds life size, but the true size of the droplets may be less than their apparent size, if they are appreciably out of the focal plane.

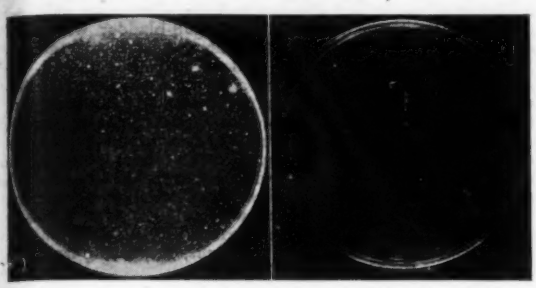


FIG. 7—19,000 colonies of bacteria on a culture plate exposed to the sneeze shown in fig. 1.

FIG. 9—One colony only, on a culture plate exposed to a sneeze as in fig. 8.

over 15 min. before falling on the culture plates. Such particles come within the category defined by Wells [3] as "droplet nuclei," and are certainly capable of conveying infection under suitable conditions.

HYGIENIC MEASURES

To prevent the spread of infection when sneezing indoors one or more of the following measures is usually adopted. We have placed them in order of estimated efficiency.

Sneezing directly into a coal or gas fire (from a short distance) does, in our opinion, ensure sterilisation of nearly all the droplets, since, owing to the chimney draught, few droplets will escape being carried into the fire or up the chimney.

The careful use of a large handkerchief.—Figs. 8 and 9 show that this method can be very efficient. In fig. 8 the subject is sneezing vigorously at the moment of exposure, but no droplets can be seen escaping. Fig. 9 shows a culture plate similar to that shown in fig. 7 but exposed in front of a sneeze trapped by a handkerchief as shown in fig. 8. This plate contained one colony only.

A transparent mask.—Fig. 10 shows a vigorous sneeze covered by a cheap mask of cellulose acetate 5½ in. × 5½ in., such as has been provided in reserve for London shelter populations. The droplets from the sneeze can be seen collected inside the mask except for three which are seen below the mask in line with its surface. The high apparent efficiency of this type of mask is rather surprising, and it is possible that some very fine droplets are escaping sideways without being visible in the photograph.

A gauze mask of good quality can be fairly efficient for a single sneeze, but becomes messy and unpleasant after multiple sneezes, since, unlike a transparent plastic, gauze cannot be wiped clean and dry.

The hand.—Figs. 11 and 12 show how very inefficient the hand is as a sneeze guard. With the closed hand in fig. 11 inefficiency would be expected, but with the open hand placed in position well before the sneeze occurred, as in fig. 12, more protection might be expected. Its failure is due to the upward deflection of the air stream, which can be seen in this photograph, and has been confirmed in another instance.

TECHNIQUE

Few people can sneeze regularly in front of a camera, owing to the ease with which the sneezing reflex is inhibited. We found a number of subjects who could do it occasionally after taking snuff, and two who could sneeze regularly, one after taking snuff, and one after inhaling minute quantities of ω-bromaceto-6-methoxyquinoline hydrobromide.

A stroboscope lamp was used with mercury kathode and a special igniting electrode, supplied by British Thomson-Houston Ltd. The flash was made by discharging through this a battery of 100 × 1 μf dry condensers charged to 2100 volts from a series of dry batteries and accumulators. A cylindrical parabolic reflector of duralumin was placed behind the lamp with small electric heaters at the sides to keep the lamp gently warmed. The flash was timed with a hand-controlled switch by an observer who watched the onset of each sneeze. The camera C, lamp L, and subject S were placed at the corners of a triangle of dimensions approximately as follows: LC 55 in., LS 36 in., CS 41 in. The subject sneezed on a line passing close to the lamp, but between it and the camera. The lamp reflector was just to the left of the portions of the photographs reproduced here. This system gives maximum illumination as the droplets approach the lamp—i.e., at the farthest distance included in the photograph. It is in contrast to the system used by most American workers, who place the lamp very close to the subject's head. Owing to the very brief duration of the flash the subject is not dazzled, even if his eyes are open.

3. Wells, W. F. *Amer. J. Hyg.* 1934, **20**, 611.

SUMMARY

The droplets from a sneeze contain many fine bacteria-laden particles which remain suspended in the air for more than ten minutes. A large handkerchief carefully used prevents the scattering of these droplets, and a simple impermeable mask collects the vast majority of them. The use of the hand for checking such scattering is very inefficient.

FIG. 11—The closed hand is very inefficient.

FIG. 12—The open hand may only stop a fraction of the particles, and deflect the rest upwards.

We wish to thank the research staff of British Thomson-Houston Ltd. for advice on the use of this lamp, and the various subjects who have patiently sneezed for this study. We are also indebted to Mr. S. F. Wilkinson for suggesting the taking of some of these photographs.

CORROSIVE STRICTURE OF THE STOMACH

WITHOUT INVOLVEMENT OF THE ŒSOPHAGUS

C. A. R. SCHULENBURG, M.B. Cape Town, F.R.C.S.
LATELY SURGEON IN AN E.M.S. HOSPITAL

CICATRICIAL stricture of the œsophagus following ingestion of corrosive acids or alkalis is well known, and lesions of the stomach in association with an œsophageal stricture have been reported (Sager and Jenkins 1935, Vinson and Hartmann 1928), but stricture of the stomach with an unharmed œsophagus seems to be very rare, at any rate in England, though the condition is fully dealt with in a number of foreign papers.

The only recorded case in the English language is described by Vinson and Harrington (1929). A man of 59 accidentally swallowed formaldehyde, subsequently developing signs of obstruction in the stomach; barium meal 4 weeks after the episode showed a double stricture of the stomach, which was confirmed at operation; there had been no permanent damage to the œsophagus. There is also a case in the autopsy records at Guy's Hospital (Bishop, P. M. F., personal communication) of a woman of 61 who swallowed hydrochloric acid and developed signs of pyloric obstruction; she died 4 weeks after admission from bronchopneumonia. At autopsy the œsophagus was found to be free from any lesion, while the stomach showed a tight, fibrous, annular stricture for 3 cm. above the pylorus. Prof. Grey Turner, who has had extensive experience of strictures of the œsophagus and other lesions following the ingestion of corrosives, tells me that he knows of only one case where pyloric stenosis

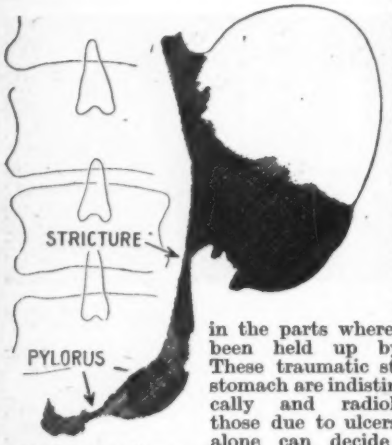
occurred after the swallowing of lysol. Similar cases have been reported by Pop and Galdau (1928a and b), Bock and Hin (1931), Popp (1931) and Faynberg (1935). Orator (1929) reviews the clinical findings on the basis of 34 collected cases, and Petrov (1935) reports 41 operations for burns of the stomach by strong acids and alkalis. Their conclusions are similar:

1. Acid burns are much more liable to cause gastric stenosis than alkalis, which affect mainly the œsophagus.

2. The site of stricture formation is almost invariably the pyloric and prepyloric regions.

3. The surgical procedures for relief are determined by the stage at which the patient is seen. In the earliest stages, with gross damage to the stomach, jejunostomy is the operation of choice. At a later stage, when stenosis with obstruction is established, gastrojejunostomy is the only rational procedure.

An interesting experimental study is provided by Testa (1938). A small amount of caustic soda, with added barium, was introduced into the œsophagus of dogs, and its passage observed by X rays. In the stomach, the alkali flowed along the lesser curvature and a severe pre-antral spasm was produced which lasted for a variable time and was followed by peristalsis and relaxation of the spasm and of the pylorus. Subsequent examination showed the severest trauma and changes to be in the parts where the fluid had been held up by the spasm. These traumatic strictures of the stomach are indistinguishable clinically and radiologically from those due to ulcers. The history alone can decide the question. The prepyloric strictures often simulate carcinoma, but the defect in the radiogram has a smoother outline than in cancer.



Tracing of radiogram after barium meal.

CASE-HISTORY

A railway-station attendant of 52 was admitted to St. Alfege's Hospital on Nov. 26, 1940, with a history of having swallowed 1 oz. of concentrated hydrochloric acid about two hours before. Until this time he had always been well. He had vomited twice before admission, and had some epigastric pain. His voice was thick and slurred, and his tongue, cheeks and fauces were badly burned. Routine immediate treatment was applied. Four days after admission he complained of difficulty in swallowing and epigastric discomfort. A barium swallow was given 16 days after admission, but showed no œsophageal delay or stricture. On Dec. 19 (23 days after admission) a barium meal X-ray examination was made by Dr. K. J. Yeo, and a stricture of the stomach proximal to the pylorus was demonstrated, the distal pocket being collapsed and empty (see figure). On Dec. 30 (34 days after admission) the patient began to vomit daily. He was then transferred to the Southern Hospital, Dartford, where the vomiting was controlled for some time by small, frequent feeds. Improvement was not sustained, however, and when I saw him first, on Jan. 29, he presented a classical picture of pyloric obstruction, with dilated stomach, succussion splash and visible peristalsis. The stomach was aspirated continuously through an indwelling Ryle's tube, and continuous intravenous saline with glucose was administered.

Operation was performed on Jan. 30 under local analgesia. The stomach was exposed through a high midline incision; it showed a tight, fibrous stricture about 2 in. proximal to the pylorus, the greater curvature being drawn up to the lesser curvature by the scarring. The proximal pouch of the stomach was much hypertrophied and dilated, while the distal pocket was collapsed and empty. There was no evidence of malignant disease, and there were no enlarged glands along the curvatures. The gall-bladder was small and contained one stone. An anterior, antecolic gastrojejunostomy was performed, and the abdominal wall was sutured with interrupted buried floss-silk sutures. Intravenous fluids and aspiration of the stomach were continued for a further 36 hours, and the patient made a good recovery. A barium meal on March 13 showed the œsophagus normal and the stoma functioning well. The distal part of the stomach was faintly outlined and showed the stricture, which allowed the passage of only a small amount of barium. Œsophagoscopy on April 16 showed no signs of stricture or ulceration, and the cardia was normal. By May the patient had gained a stone and a half in weight, was eating well, and had no abdominal discomfort.

COMMENT

A constant feature of the recorded cases is the rapidity of onset of the stenosis. One of the cases reported by Pop and Galdau had a complete stricture 19 days after swallowing caustic soda, while the cases mentioned in this paper had developed tight strictures within 4 weeks. This can be explained by rapid healing with fibrosis, following intense localised destruction of mucous membrane and stomach coats by the corrosive while held up by the pyloric and pre-antral spasm. This holding up of the corrosive by spasm was well demonstrated in Testa's experiments. The intensity of this destruction is shown by the fact that acute perforation of the stomach wall can occur if the acid remains localised to one area. The radiographic appearances may be indistinguishable from those produced by carcinoma or sclerosing ulcers. This is important, because malignant disease must be excluded or appropriately treated at operation. The preponderance of stomach lesions where acid has been swallowed and of œsophageal stenosis where alkali has been taken is noted by all observers, but no rational explanation has been given. Complete absence of injury to the œsophagus was demonstrated in the case recorded here by X-ray examination and œsophagoscopy.

I wish to thank Dr. W. Allen Daley, medical officer of health to the London County Council, for permission to publish this case, and Dr. P. M. F. Bishop for a note of the case at Guy's Hospital.

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Medical Societies

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM

THE annual congress of this society took place at Trinity College, Cambridge, on Sept. 4 and 5 under the presidency of Mr. R. AFFLECK GREEVES (London) who read a paper on *œdema of the macula*. He thought this condition was always accompanied by deterioration of central vision, varying in degree according to the severity of the œdema. The distortion of straight lines was a common symptom and a valuable diagnostic point. A sense of diminution in the size of objects was also common. The clinical signs were loss of retinal transparency, though in the slightest degrees of œdema a minute ophthalmoscopic examination and a careful comparison with the appearance of the macula of the other eye might be necessary for its detection. After œdema central vision might be restored, improve up to a point, remain permanently reduced (possibly with some visual distortion), or be permanently destroyed, as in most cases of central venous thrombosis. The ophthalmoscopic appearance of the macula might return to normal, but some permanent pigmentary disturbance could often be seen. A complete restoration of the normal appearance of the fundus did not always connote full recovery

of vision, and a fine granular disturbance might persist at the macula even when normal vision was restored. Mr. Greeves later described a case of *choroidal sarcoma at the macula*. He had encountered 10 such cases, which varied greatly in malignancy.

Mr. HUMPHREY NEAME (London) described 17 cases of *dendritic ulcer of the cornea*, 8 of which were associated with herpes simplex. He had treated the ulcers mainly by hot bathing, with atropine, pad and bandage, and rest. He thought that dendritic ulcers should be given a chance to heal without carbolisation.

In his paper on *unusual symptoms of migraine* Mr. T. HARRISON BUTLER (Birmingham) said that in a few cases the headache was due to ocular defect. But a headache of recent origin must be due to some recent cause, and an ocular defect which had been present for some years or from birth was unlikely suddenly and independently to give rise to headache. Large errors of refraction and muscle balance did not generally cause headache, and if headache was present it was often not relieved by glasses. In the discussion which followed the PRESIDENT was of opinion that headaches were often wrongly attributed to errors of refraction; fatigue was an outstanding cause of migraine. Mr. FRANK HECKFORD (Ryde) drew attention to the large numbers of young people between 15 and 25 among whom disturbances of this kind were common, due to some vasomotor irregularity. They nearly always complained of cold hands and feet and of a feeling of weight on the top of the head, accentuated in girls during their periods.

Sir JOHN PARSONS, F.R.S. (London) embodied a memorandum sent to the Army Council by a subcommittee of the Military Personnel Research Committee in his paper on *eye protection in warfare*. The committee did not favour a metal vizor of the Cruise type, but Sir RICHARD CRUISE (London) in the discussion said that it was the experience of ophthalmic surgeons that at least half of the war casualties with which they had to deal might be prevented by the provision of an eye protector. The argument that the vizor under unusual conditions impeded visibility did not seem to him to hold good, for it need not be lowered when it was likely to handicap the wearer. Mr. HARRISON BUTLER pleaded that some such protection ought to be available for civilians who had to deal with incendiary bombs, and it was remitted to the council of the society to consider approaching the Ministry of Home Security with the suggestion that civilians to whom steel helmets had been issued should have the opportunity of buying for themselves some form of eye protection.

The set discussion of the meeting on *ocular injuries resulting from the war* was opened by Dr. O. M. DUTHIE (Manchester). He said that the number of eye casualties so far in the war was small. He had seen only 50 severe injuries. Ruptures were the most common of all war injuries. Many, especially those due to flying glass, were virtually untreatable, and even when they were not severe the end-results were deplorable. Subconjunctival ruptures, with or without dislocation of the lens, were not infrequent. Dr. S. ZUCKERMAN, who dealt with the problem of blast, held that although at high pressures, when casualties were close to the exploding bomb, there might be eye injuries due to blast, other injuries were likely in any case to prove fatal. He pleaded for more statistics from those at work in eye hospitals and elsewhere, saying that until these were available they would be largely working in the dark on the question of protection.

Of 100 patients Mr. E. B. ALABASTER (Birmingham) had seen at a casualty hospital, 60 were cases of traumatic conjunctivitis, 21 were penetrating wounds, chiefly from metal or glass foreign bodies, 6 were cases of corneal abrasion, 5 were cases of subconjunctival hæmorrhage, and 5 were injuries to the lids only. There were single cases of central retinal block, detached retina and orbital cellulitis. Of the 21 cases of penetrating wounds, 12 had required enucleation of one eye. There was no case of complete bilateral loss of vision. Mr. HERBERT CAIGER (Sheffield) said that nothing had brought home to him the tragedy of this war so much as the case of a man aged 65 who was injured last November. According to the man's story one eye was blown right out of the socket by blast. The other eye showed detachment of the retina. More than twenty speakers took part in the discussion and several mentioned cases within their experience in which there had been no apparent injury to the eye by a blow or the penetration of a foreign body, and yet there was serious damage which could only be put down to blast. Others claimed that no injury had been proved to have been produced solely by windage, that the term "blast" had become discredited, and that it would be better to call these lesions explosive injuries due to the impact of a foreign body on the eye. One speaker told of a patient who had been thrown 40–50 ft., but had sustained only an injury to his knee, and complained that with one eye he could not see very well. To this it was replied that one might with equal logic ascribe to blast the injuries received by falling from a high roof. Mr. A. B. NUTT (Sheffield) stressed the necessity for an ophthalmic surgeon to see eye cases as soon as possible after their admission to hospital, before they were lost in the surgical wards on account of other injuries. Sometimes when there were extensive injuries to the face it was found that they had been stitched with thick silkworm gut without regard to alignment or the normal anatomy of the part. Mr. VICTOR PURVIS (London) said that on the night of Dec. 29 last year, when there were widespread fires in London, 128 firemen were treated at Moorfields, of whom all but 4 had corneal or conjunctival foreign bodies. None of them, however, needed inpatient treatment, and only 24 a second visit to hospital.

Dr. M. D. THAKORE (London) described a case of *pterygium*, a rare condition in this country, though common in the Near East.

Mr. EUGENE WOLFF (London) gave an illustrated demonstration of *cholesterin spaces* in celloidin sections and of differential staining of the rods and cones. Mr. F. A. WILLIAMSON-NOBLE (London) read a paper on *unsealed retinal holes*. It was open to question whether the presence of a hole with only a small peripheral loss of field and no interference with central vision required an operation, particularly in times like these when bombing raids might interfere with proper post-operative care.

Squadron-Leader J. H. DOGGART described *refraction under war-time Service conditions*, and suggested various expedients for speeding up refraction tests for Service men. In the discussion which followed it was the general experience that malingering, which was much in evidence during the last war, was almost unknown in this, but some men tried to prove that their eyesight was better than it was in order to obtain a particular job. One speaker mentioned that it was not uncommon for the vision of recruits to be 6/9 on joining and shortly after entry into the army to be 6/6, but it was pointed out that the two examinations would probably be made by different people under different conditions.

Mr. FRANK LAW (London), who in the absence of the hon. secretaries on service had arranged the meeting, read a paper on *squamous-celled carcinoma of the conjunctival surface of the lid*. In this rare condition it was difficult to determine the site of origin of the neoplasm. In the case he brought forward there was an ulcerated area, just nasal to the midline and some 6 mm. across. Removal was undertaken under general anæsthesia and repair effected by a simple plastic manœuvre. Sutures were removed after six days, and when last seen the patient complained of nothing either as regards comfort or appearance. The specimen proved to be a squamous-celled carcinoma, but a point of even greater importance was the large amount of keratinisation and the many cell-nests found in a tumour arising in this situation.

Mr. G. T. W. CASHELL (Reading) described a case of *orbital angioma* in a woman aged 43, and several members mentioned other cases occurring at a mature age although, according to the President, such growths did not commonly increase in size save during the growing years. Wing-Commander KEITH LYLE had obtained remarkably successful results by operative treatment in cases of *diplopia due to head injury*, arising from either paralysis or paresis of one or more of the extrinsic ocular muscles or a fracture of the orbit producing a displacement of the eyeball downwards. Mr. O. GAYER MORGAN (London) described a case of *nystagmus synchronous with the pulse-rate*. It was found to be labyrinthine in type, due

to mastoid disease, operation for which stopped the nystagmus. The last paper of this meeting was by Mr. LINDSAY REA (London) on a remarkable case of keratitis, which he had successfully treated by the osmotic action of 10% warm magnesium sulphate applied for 5–10 min. two or three times a day.

Reviews of Books

The Extra Pharmacopœia (Martindale)

(22nd ed.) In two volumes: vol. I. London: the Pharmaceutical Press. Pp. 1289. 27*s.* 6*d.*

PUBLISHERS sometimes announce that a book is eagerly awaited and the wish may be father to the thought. The first edition of the Extra Pharmacopœia in 1883 was sold out within a fortnight: the twenty-second edition which appeared last Saturday is likely to meet the same fate. For the book is a compendium of information otherwise only obtainable, in many instances, by reference to numerous textbooks and by arduous searching through the scientific literature. And it happens that in the five years since the last edition appeared medicine has been enriched with synthetic remedies which have robbed many common ailments of their terror. The new section headed sulphanilamidum with its 37 pages is the longest in the book. Advance in knowledge of the sex hormones has doubled the section on œstradiol, and names like stilbœstrol and testoster one propionate occur for the first time. And these are but two of the more striking examples of the new therapeutic agents described. The book is also a complete guide to the law of poisons, the regulation of dangerous drugs, and the safeguarding of vaccines, sera, insulin and other therapeutic substances. The Pharmaceutical Society of Great Britain deserves high praise for its enterprise in producing such a work under the circumstances of the times. The only misprint occurs on p. 1078 and the seriousness of the index is relieved by calling medical pigments just Pig.

History of Magic and Experimental Science

Vols. V and VI, the Sixteenth Century. LYNN THORNDIKE. London: Humphrey Milford, Oxford University Press. Pp. 695 and 766. 66*s.* 6*d.* each volume.

Prof. Thorndike's learned and detailed account of the study of magic and experimental science at a time when they were of almost equal importance in public estimation is a book for the scholar rather than the general reader. He tells us that he has mentioned three thousand people by name, and has 1700 additional subjects in his index. Among such profusion of trees, it is sometimes a little difficult to keep one's eye on the wood. The thing which stands out with extreme clearness is the extraordinary surge and boiling up of Renaissance thought. If we leave out of consideration altogether the greater names, such as Leonardo, Galileo and Copernicus, it is yet a most inspiring sight to watch the host of smaller men who launch themselves with headlong enthusiasm on the seas of controversy, ready to tackle any problem, from the structure of the universe, to the cure of demoniac possession by means of the liver of a black cat.

The difficulties which beset any real experiment were almost insurmountable. It was impossible to test or even to observe many of the natural—or unnatural—phenomena which were the accepted stock-in-trade of argument. The discovery of the New World and of the printing press had between them laid bare a wealth of unimagined marvels, known of necessity by hearsay evidence only to most investigators. Therefore though the reasoning might be close, nothing was too wildly improbable to serve as a premiss and it is indeed a wonder that through the storm and tumult, beneath the reciprocal shouts of "charlatan" and "empiric" we are able to discern the faint foreshadowing of psycho-analysis, the early—and very strange—gropings of biotherapy. At the beginning of the century it was necessary to steer a wary course between the theories of Aristotle and ecclesiastical dogma, backed menacingly by the Holy Office. With lapse of time both these influences rather waned, and from a quite early date it was possible to circumvent the Church by surprisingly simple devices, such as a postscript appended to one's pet and fully developed theory, stating that since it is contrary to the teaching of Scripture the author does not, of course, believe it; or that all mention of God has been omitted in the discussion of dreams, because at this time he does not wish to mix profane and sacred matters. The book of Genesis however was to remain a formidable stumbling-block to the scientist for two or three centuries longer.

It is perhaps noteworthy that while science has developed so as to be almost unrecognisable, magic, though curtailed in scope, still stands exactly where it did. We no longer consult witches, but how many otherwise intelligent people buy and wear amulets against rheumatism, mumble some magic formula to the new moon, and read with avidity those astrological prophecies in the Sunday papers, which though shorn of all pomp and beauty remain in essence identical with their sixteenth century prototypes.

Artificial Pneumothorax

Its practical application in the treatment of pulmonary tuberculosis. Editors: EDWARD N. PACKARD, M.D., JOHN N. HAYES, M.D., SIDNEY F. BLANCHET, M.D. London: Henry Kimpton. Pp. 300. 21*s.*

MUCH has been written about therapeutic pneumothorax, but this book is a valuable contribution, coming as it does from the pens of seventeen Saranac Lake physicians. Pooling their experience, they have produced a practical guide to treatment by artificial pneumothorax which embodies the practice of the Trudeau Foundation. Much of what they say has necessarily been said before, and is familiar to specialists in this country; there is nothing new, for example, in the historical survey, admirable though it is, or in the chapters dealing with apparatus and technique. The physiology of pneumothorax and the pathology of the collapsed lung are given their proper share of space, and the value of the X-ray picture in the control of treatment is clearly set out. Dr. H. L. Sampson makes the captivating statement that "the X-ray is not the handmaiden but the mistress of therapeutic pneumothorax." The best wine, however, is served towards the end. The chapters by Dr. J. N. Hayes on pleural complications of artificial pneumothorax and by Dr. W. W. Woodruff on the results of treatment of tuberculous empyema, are very good indeed. Their practice is neither too conservative nor too energetic, and their opinions are constantly backed by results. Finally, in the last chapter, Dr. Hayes and Dr. Packard discuss the results of treatment by artificial pneumothorax. In this assessment they use the findings of others as well as their own, and handle an almost impossible task adroitly. The book does not set out to be a symposium, but leading references are given at the end of each chapter.

Your Health in Wartime

CHARLES HILL, M.D. Camb., D.P.H. London: University of London Press. Pp. 48. 1*s.*

THIS little book is based on a series of broadcasts to schools arranged by the Central Council for Health Education and the Central Council for School Broadcasting, and given by Dr. Hill, chairman of the emergency committee of the former body. The talks are admirable, both in matter and manner, emphasis being laid on the public duty as well as the desirability of healthy life and practice. Dr. Hill's maxims will stick in the mind:

It is bad health as well as bad manners to cough or sneeze into the air.

If you feel a cold coming on . . . get as far away from everybody as you can . . . The person who carries on at school or work despite a cold is not a hero but a danger to the community.

The first two chapters, dealing with germs and the body's defences (including immunisation and inoculation) contain much scientific information written in a simple, racy style which would interest any intelligent elder schoolboy or girl. These are followed by talks on cleanliness, ventilation, sleep and rest, and a supplementary chapter on food. The virtue of moving as contrasted with stagnant air is made clear by explanatory examples, and advice is given on the importance of early sleep and regular habits. The food section is perhaps more valuable to parents than to children, and the whole book may well be read and kept for reference by anybody interested in the care and welfare of young people.

THE LANCET

LONDON: SATURDAY, SEPTEMBER 27, 1941

THEN AND NOW

THEN was in 1935, in those easy ante-bellum days, when shops competed for the privilege of selling one a Polish egg, and "rationing" merely conjured up vague memories of 1917 or started mother off on a well-worn trail of reminiscence. In those days of plenty, six years ago, 63 men and 63 women of the English middle classes weighed all the food that they ate for a week of their busy lives and sent the results to Dr. WIDDOWSON. It all seemed rather a bore no doubt, but Dr. WIDDOWSON was enthusiastic and persuasive, and the doubters were induced to participate by assurances that this was an altogether novel method of making a dietary survey, and that the results would be of far more value than any hitherto obtained by the hackneyed and inaccurate "family" technique. It seems like a dream to us now—the butter and jam these men were eating, and the meat! Two men had more than 24 oz. of butter a week and four more than 60 oz. of mutton and beef. The women were not quite so rapacious, but 59 of them were eating more butter than the paltry 4 oz. a week allowed us by Lord WOOLTON in spring 1941.

These are some samples of the information which Dr. WIDDOWSON and Miss ALINGTON have set out on another page. They aimed at finding out how well (or ill) people were adapting themselves to the rationing and restrictions in operation during the spring of 1941. To this end they reanalysed the data which had been collected by one of them in 1935. This told them how much of the foods which were rationed in 1941 were being eaten by men and women in 1935. They then carried out another dietary survey on 57 individual women, 7 of them victims of the previous experiment. This made it possible to trace the effect of the war on consumption of both rationed foods and foods which were not officially rationed but were in short supply. Some of their conclusions are illuminating. They think, for instance, that the shortage of cakes and biscuits is due more to increased demand than decreased supply, and the Ministry of Food agrees that this is probable. They show that the women surveyed in 1941 were rapidly eating up stores of jam which they must have been accumulating before rationing started. From the study of sugar consumptions they suggest that these women were planning to replenish their stocks of jam to the best of their ability when the fruit season came along. They demonstrate how the fruit shortage had reduced the intakes of vitamin C, and point out that the majority of women in this country must have been having less vitamin C in 1941 than many of the experts have considered to be a woman's minimum requirement, and naïvely suggest that since there have been no outbreaks of scurvy there may be something wrong with the experts' computations. One of the most interesting findings was that rationing may and does restrict the intakes of the foods which fall under the official axe, but it stimulates the consumption of those which do not, so that the calories remain much where they were before the limitations were imposed. This principle, it seems, was first established by MCCANCE and WIDDOWSON in an experimental study of rationing, so far unpublished. Further studies of individual intakes might be of considerable benefit to the theory and practice of rationing and to nutrition in its wider aspects. Men, it appears, are likely to have been much harder hit by the rationing than women, and it is to be hoped that Miss WIDDOWSON and her colleague will now turn their attention to the sterner sex and see how they are getting on when it comes to the spring of 1942.

WHITHER PHARMACOLOGY?

THE frontiers of pharmacology are less clearly defined than those of any other subject in the medical curriculum, and therein lies its strength and its weakness. Pharmacologists as a class are imbued with an expansionist philosophy of a benign type. Their researchers—the mechanised columns of scientific thought—are often found in the adjoining territories of chemistry, physiology, bacteriology and toxicology, not to mention the lightly tilled terrain of therapeutics. It is scarcely surprising that they have had to contend with invasion by the same technique. Thus it comes about that researchers in kindred subjects find themselves operating behind one another's lines. Only those afflicted with the Teutonic plague of rationalisation will see in this organised disorder anything unwholesome, for it is one of the traditions of British medicine that the trained researcher should be allowed to flit where fancy beckons. Nevertheless, the integrity of pharmacology is seriously threatened; there are signs of impending dissolution, and already clamant voices are demanding a share of the spoil.

The science has passed through several phases since the middle of last century. Early pharmacology, as Prof. J. A. GUNN pointed out in his Dixon memorial lecture,[1] concerned itself with the investigation of the action of drugs, mainly plants and inorganic compounds, which had been empirically introduced into therapeutics. This naturally led to the investigation of other substances, and so to the synthesis of new compounds which pharmacological investigation might show to have therapeutic possibilities. The commercial significance of this development has become increasingly apparent, and it is not surprising to find manufacturing chemists paying more and more attention to their research laboratories.[2] A vast amount of work is done there, but inevitably only a tithe of it results in the production of new remedies; and an organisation must possess considerable financial resources to meet the heavy cost of research on these lines. For many reasons—monetary considerations not least among them—few universities could hope to adopt the same methods even on a small scale. The academic pharmacologist had therefore to reconcile himself to the loss of this province of his science. But no-one will deny that the work in many commercial laboratories is done with great skill; again, many firms expend large sums on fundamental research without hope of immediate reward, thus adding to the general corpus of our knowledge of pharmacology; and lastly, the universities can adapt themselves by training young pharma-

1. *Proc. R. Soc. Med.* 1941, **34**, 469.
2. Astonishing evidence of this is provided in the 1289 pages of "The Extra Pharmacopœia," the 22nd edition of which is reviewed on p. 370.

cological specialists to undertake research in commercial laboratories. A peripatetic correspondent can see no reason for the great gulf fixed between the university and the commercial firm in Britain. He would like to see something of the coöperation between the two which is customary in Germany and, he might have added, in Holland, Denmark and the United States. Full-time members of the medical departments of our universities are forbidden to help a commercial firm with its research, for this is classed as private practice; yet drug firms of repute need to assure themselves that their products are non-toxic to human patients, and some products, like liver extract, must be tested on patients. When a university department does such testing it may take no payment, though the firm may send free supplies of drugs in return or even pay the salary of an assistant engaged on *another* task, so potent is the fear that if the firm pays the laboratory piper it will soon call the tune of university policy. If ever there was a case for open and full coöperation here is one.

How to train a man to be a competent pharmacologist is disputed, but it is certainly not enough merely to take a physiologist and encourage him to use drugs for his animal experiments. "The primary aims and outlook of pharmacology," says GUNN, "are so different from those of physiology that they can best be regarded as separate disciplines requiring separate direction and accommodation." It is reasonable to add that this separate pharmacological outlook can best be acquired by insisting that after graduation the aspiring pharmacologist should spend two or three years in the wards of a hospital, for these surroundings will make him more acutely aware than any laboratory of the needs of the therapeutist. That the basic technique of experimental physiology and of experimental pharmacology have much in common cannot be denied, but the pharmacologist must always remember that such methods are only a means to an end—improvement in medical treatment. The fetish among young researchers of "getting something published," doubtless accounts for some of the uninspiring contributions which reveal an outlook limited by the kymograph. Prof. RALPH STOCKMAN used to impress on his assistants the importance in research of "starting with a disease," and the advice was never more sound than it is today. Its importance lies partly in committing the pharmacologist to work in the clinical field, and this means that the experimental technique of the laboratory takes second place as the occasional aid to the clinical approach. Few are competent to grapple with the cause and cure of a disease, but the pharmacologist whose foremost consideration is the study of a drug or a series of drugs at the bedside will get useful data as readily as the experimental worker in the seclusion of the laboratory; and he stands to get a great deal more information that has a practical application. As Sir THOMAS LEWIS says, there is still a great deal of work to be done in assessing the value of remedies in common use, and in providing a clinical justification for the use of drugs whose inclusion in the pharmacopœia depends solely on empiricism. Even this kind of research serves to illustrate the importance of making a disease the starting-point of investigations on the actions of drugs. If the result is the negative one of discrediting a drug previously considered effective the work is none the less valuable, for such information is often the necessary preliminary to constructive contributions aiming at the eradication of disease.

The necessity for preserving the integrity of clinical pharmacology can best be sustained from the standpoint of teaching. There is now an unmistakable tendency in the schools to dissociate "pure" pharmacology from its clinical application. This is defended by urging that systematic instruction on medical treatment should be postponed until the student is in his final year, and it is made an excuse for handing the teaching of pharmacology to those who are nothing more nor less than experimental physiologists. GUNN, remarking that the proposal to include pharmacology as part of physiology is no novel idea, goes on to say that it has been put into practice repeatedly "and with almost uniformly bad results for pharmacology and for the medical student." This fantastic experiment seems in fact to be designed to discourage the student from taking an intelligent and critical interest in the treatment of sick people during the first two years of his clinical career. As for the teaching of pure pharmacology GUNN says, "I am convinced, from long experience as a teacher and examiner, that the attempt to teach pharmacology to the medical student as a pure science and without continual reference to the therapeutic application of drugs is doomed to failure." In short, the clinical application of pharmacology must be hammered into the student from the very beginning; and it is regrettable that clinical teachers do not combine more closely with their full-time academic colleagues by introducing more pharmacology and therapeutics into their bedside teaching. In most teaching units it should not be difficult to find a member of the staff who would make it his business to quiz the students on pharmacological subjects which have a bearing on cases under discussion. It would be profitable for the students and now and then might even stimulate a young physician with a bent towards clinical research to approach his task through the medium of pharmacology.

THE SPRAY OF DROPLETS

IF William Shakespeare had been more health conscious he might have told us that some are born to sneeze, some achieve sneezing, and some have (other people's) sneezing thrust upon them. And as he had read the essays of Michel de Montaigne he would have known that the third group have nothing to fear, for the breath discharged from the head is blameless—which explains the *sois béni*! to the sternutator. But that is not at all the burden of a study from the National Institute of Medical Research, printed on another page. Flash photography has established that a single sneeze may project at least 19,000 droplets a horizontal distance of three feet, and that many of these droplets may remain suspended in the air for more than a quarter of an hour. Most of them, no doubt, carry only harmless saprophytes from the saliva, but one of the photographs shows potentially dangerous nasal discharge being projected forward by the blast from the mouth. The range of hazard rarely exceeded six feet from the muzzle of the sneezer but in the home and workplace that range may often include a number of victims if the droplets are infective. The object of this particular inquiry was

to determine the relative merit of the methods in common use for defence against the spray. Sneezing into a coal or gas fire may be bad mannered but is highly efficient. The skilful use of a large handkerchief is hardly less efficient and few droplets get past the cheap plastic mask provided for use in shelters. A gauze mask is all right once, but soon gets messy. The hand however is little more than a polite gesture and is miserably inefficient. The experience thus gained is timely and may well afford the basis of a hygienic code for the coming sneezing season. Some of the photographs are, in fact, likely to appear shortly in a Ministry of Health "Shield that Sneeze" campaign.

But one may ask why not go one better and abolish sneezing? The culprit may reply in dictionary language that it is an involuntary reflex respiratory act or, briefly, that he can't help it. The one may be true and the other a half truth, if that. For momentary firm pressure on the nose with finger and thumb just below the bridge will completely inhibit a developing sneeze. That is the safeguard of the burglar and of the surgical patient with stitches in his belly wall. But avoidance of capture and of acute pain are stronger motives than social decency and the common sneezer may be unwilling to forgo the organic pleasure of the completed act. Nature too must set value on the maintenance of the respiratory fairway or she would not have devised so explosive a sweep. But that does not justify doing one's toilet in public. Those of us who witnessed the decline of spitting a generation ago need not despair of a similar revolutionary change of public habit. Before that crusade started Canon Rawnsley described the pavement outside a Lancashire mill just after closing time as like an April shower. But the reforming spirit, aided by an occasional substantial fine, has abolished public spitting and children now go to the Zoo to see the llama do it. Let us then cease to regard sneezing as a rather poor joke and make a careful study of its natural history and ethic in the hope of eliminating yet another of our avoidable ills. The Hampstead Institute has made a good start.

Annotations

WHEATMEAL BREAD OR MILK?

It is good of the cow to help man by spending so much of her leisure in turning grass into milk, for the human body does not possess a rumen equipped with a large population of micro-organisms willing to assist in the breakdown and assimilation by their host of cellulose and other fibrous materials, whereas any baby can digest cow's milk. But Mr. Norman Wright, D.Sc., in an interesting paper[1] from the Hannah Dairy Research Institute at Ayr, would let the cow, rather than man, consume the branny and more nutritious portion of the wheat berry as well as the grass. He believes, after making extensive calculations, that it would be false economy to make an 85% extraction loaf by diverting wheatfeed from the dairying industry. Sharps, pollards, wheat germ and bran will, in fact, benefit man more if he gives them to the cow and demands milk in return than if he adds them to white flour and tries to digest them himself.

Dr. Wright's case rests on the assumption that if you give the cow an extra 700,000 tons of wheat offals which is the total amount of wheatfeed that would be lost if there was a complete turnover to the 85% extraction loaf), you get back 350×10^6 gallons of milk, or (say) a 25% addition to the present national supply; this is clearly implicit from the caption "resulting loss of milk" in his table 2. But is this indeed the case? Is the cow a penny-in-the-slot machine into which you insert a production ration of any given size and automatically get back the exact equivalent of your feeding stuff as milk? We ought to remind him that even in peace-time when we had in effect all the concentrates we needed—the wheatfeed from 73% extraction, plus millions of tons of imported wheatfeed, plus quantities of imported maize and other cereals—we only managed to get a bare 12% more milk than we did in 1940–41. It seems to us that Dr. Wright's thesis—viz., that 700,000 tons of extra wheatfeed would produce an equivalent quantity of extra milk—will only be true if all the dairy cows to which the feed is to be given are on a bare maintenance ration to begin with. This is not the case. To assume that it is so is to neglect all the evidence of the extent to which the dairy farmer has been making himself self-supporting for the coming winter. Dr. Wright states "Wheatfeed is practically the only cereal product available in large volume to supply the carbohydrate-rich portion of the rations of milking cows." He is either unaware of, or has not considered, the large quantities of oats, "dredge corn" and other cereal grains which have been harvested very recently, much of which, excepting of course the millable wheat, the farmer will undoubtedly use as food for stock. The portion of the oat crop, for example, that is required for human food and for feeding essential horses is only a small fraction of the total oat harvest; the very large remaining bulk can, and on very many farms will, be used for feeding dairy cows. But even if, for the sake of argument, we went without the bread and the extra milk were actually produced there is still an economic difficulty, on which Dr. Wright has not touched. To put it colloquially, can the baker say to the housewife, "I'm sorry, you will have to manage with a loaf of bread less this week and you will be able to save the 4½*d.*, but you can, I believe, get the same amount of energy, if you need it, from Universal Dairies next door, by buying four quarts of milk—only this will, I am afraid, cost you 3*s.*"? And the answer is, he cannot.

The short reply to Dr. Wright's ingenious thesis is this. We *must* have the extra bread, and the loss of wheatfeed for dairy cattle this winter will be more than made up from home-grown grain.

1. *Chem. and Ind.* August 23, 1941, p. 623.

PROSPECTS IN NURSING

The shortage of nurses is partly due to doubt in the minds of possible candidates about the opportunities and financial security which her profession opens to the trained nurse. Some of her prospects were outlined at the conference, arranged by the Birmingham and Three Counties branch of the Royal College of Nursing, which was held at Birmingham from Sept. 18 to 21. The chair at the meeting was taken by Miss Mary Jones, president of the Royal College of Nursing, and the speakers dealt in turn with the outlook for the trained woman in hospital nursing and administration, as a sister tutor, in public health nursing, Queen's nursing, district midwifery, industrial nursing and dietetics. Mental nursing and private nursing were not mentioned. The attachment of the speakers to their work appeared strikingly in what they had to tell; it was equally remarkable that when they spoke of remuneration some were almost shamefaced at having to quote such low figures; and one or two, almost apologetically, asked their hearers not to accept less than a given—extremely low—standard of reward, lest they should prejudice the chances of their colleagues. Few could claim that the posts they were describing were pensionable. It is

characteristic of nursing at the present time that the satisfying quality of the work is only appreciated by those who are practising it, for many of whom it completely outweighs poor terms of service. But to the onlooker and the possible candidate the attractions of the work are obscured by thoughts of financial stringency and of teasing personal restrictions. When Miss Edith Cockeram spoke of the ward sister's post as being one of the happiest a nurse ever holds she was speaking of this professional happiness which cannot be appreciated from without. When Miss M. A. Carr described the work of a sister tutor as "interesting, arresting and fascinating" she was not exaggerating; she was giving a piece of intensely vivid autobiography. Miss I. H. Sinnett showed the wide variety of social work open to the public health nurse, who can become a health visitor, a school nurse, a district nurse, or can specialise in the care of tuberculous or mentally defective patients. In some areas, on gaining her public health qualification such a nurse can hope for a salary of £255 a year rising to £390, but this figure is exceptional; the maximum may be only £280, with an extra £20 if she becomes head of a home. These are not brilliant prospects for a woman who has taken at least three years of general and one year of special training; yet some nurses have accepted such posts at salaries of less than £250, because they found it convenient to their own plans to do so, disregarding the effect such undercutting must have on the prospects of others. The posts are pensionable, however, and also give opportunity for an ordinary home life. That this is as important to those within the profession as to those considering it was also indicated by Miss M. E. Melville who numbered among the advantages of life as a Queen's nurse the opportunity to live and work in what district she chose; more—she can either live at the nursing association, or make a home for her family, or even share quarters and work with a friend. The same enthusiasm for freedom animated Mrs. Dowson-Weisskopf who spoke of industrial nursing as an opporsunity for the nurse who was something of a rebel and teformer, provided that she also had the tact of the rerpent and the dove combined. Yet she had to urge her hearers not to accept salaries of less than £200 a year. The dietetic nurse, whose work was described by Miss E. E. Richards, also had a keenly interesting job and takes a difficult course of training. Is it possible that a profession offering such exceptional opportunities for wide and enriching experience has become a last resort among callings for women? The leaders of the nursing profession can fairly claim that they have everything to offer: to incoming candidates a job worth doing; to hospital authorities the help they need to carry on their work. But the candidates will not come without better terms of service. Dame Ellen Musson, who spoke of the past achievements of the College of Nursing in mending the nurse's lot, would perhaps have roused even more enthusiasm if she had disclosed a College campaign for the future—a five-year plan, say, in which the prospects of the trained nurse were to be raised to a level worthy of her work. The shortage of nurses is the measurement of the need for this reform, and gives the College an argument which cannot be ignored.

TISSUE AUTOLYSIS AND SHOCK

THE custom of wearing black at funerals derives, they say, from an attempt to propitiate or escape the malevolence of the dead spirit. Superstition dies hard, even in the scientific sphere. The baleful influence of the dead we translate as "tissue toxins"; these we held responsible for the curious state of "shock" until the work of Blalock in America and Slome and O'Shaughnessy in this country convinced us that a major part in the production of at least some kinds of shock was played by a loss of circulating fluid into the injured part. Repeated attempts have been made to demonstrate such hypothetical tissue toxins; particularly often (and with strikingly contradictory results) have liver autolysates been injected into the peritoneal cavity. It is almost impossible, as Professor Florey and his associates[1] point out, without the most rigid precautions, to avoid contamination of these autolysates with saprophytic anaerobes. However, with very special attention to the details of their technique, in 4 rabbits out of a total series of 96 they achieved this end, since instead of the rabbits dying after the intraperitoneal injection of 10 c.cm. of fresh-ground liver they survived. These animals developed a transitory hæmoconcentration of + 30%, indicating a local loss of plasma, which was confirmed in other animals by an intravenous dye method. The significance of this is unknown, since in one of two control animals, subject to no more than preparation and ether, a similar figure (+ 26%) was obtained. Eleven out of twelve previous reports on this subject have been concerned mainly with dogs. Trusler and others[2] produced sterile exudates in survivors by autoclaved liver autolysed in the presence of bacteria. Their very careful work suggested, first, that the organism, harmless if injected alone, produced fatally toxic products in the presence of dead liver, and secondly, that necrotic liver alone had no such fatal effects. The Oxford workers' data appear to confirm this, and in addition they report some ingenious experiments completing the picture, where acriflavine in the digesting liver autolysate prevented bacterial growth. This brew resulted in survival after injection, whereas the control rabbits without acriflavine died. No control experiments, however, are reported in which acriflavine was added to the autolysate just before injection. The bearing of this type of experiment on human lesions has been discussed by Boyce and McFetridge.[3] Minor degrees of renal damage should be looked for in all cases of presumed liver trauma, since in several cases severe cortical necrosis has supervened. But it is doubtful whether deductions about types of human shock other than those associated with liver damage are at present warranted.

ENDOMETRIOSIS OF THE LUNGS

OF the several theories cited to account for ectopic endometrial tissue, such as that of Sampson who postulated tubal regurgitation as the cause, the congenital theory, and the serosal theory, there is only one that really accounts for distance endometriosis and that is the metastatic theory of endometrial embolism, venous or lymphatic. The authenticated cases of endometriosis found in the thigh and the brachioradialis muscle can only be explained on the grounds of venous metastasis. But experimental work is still needed to demonstrate that endometrial emboli are capable of being transported in the venous system and can survive in their new habitat. The theory could become even more attractive if in their new situation they could be shown to obey the cyclical stimuli of the endocrines that influence their parent tissue. This work has now been successfully performed by Hobbs and Bortnick.[4] They prepared the endometrium of large rabbits by injecting œstrogens and then removed it by abdominal hysterotomy. Small endometrial clippings were then injected into the ear vein with a large needle, and they comment on the large pieces that they were able to introduce without ill effects on the rabbits. But of 12 rabbits so operated on endometrial implants were demonstrated subsequently in the lungs of 8. Excellent microphotographs show endometrial tissue in the lung vessels and in some of these the endometrium has disrupted the wall of the vessel and started to invade the adjacent parenchyma of the lung.

1. Abraham, E. P., Brown, G. M., Chain, E., Florey, H. W. and Gardner, A. D. *Quart. J. exp. Physiol.* 1941, **31**, 79.
2. Trusler, H. M., Reeves, J. R. and Martin, H. E. *Arch. Surg.* 1935, **30**, 371.
3. Boyce, F. F. and McFetridge, E. M. *Ibid*, 1937, **34**, 977.
4. Hobbs, J. E. and Bortnick, A. R. *Amer. J. Obstet. Gynec.* 1940, **40**, 832.

Kerr, Hobbs and Bortnick impregnated some of the animals that had previously been given endometrial implants in order to ascertain if a decidual reaction occurred in the ectopic endometrium in the lung. In several instances this could be demonstrated, and their microphotographs clearly show a decidual reaction. In control pregnant rabbits no decidual reaction could be seen in serial section of the lungs. In a final experiment they tried to stimulate the ectopic endometrial tissue in the lung with stilbœstrol, and in 4 out of 12 experiments a diffuse endometriosis was produced. This work, if confirmed, proves that endometrium can be transported to distant metastatic foci by the veins, that it can live in its own environment, and that it is capable of undergoing the same changes as its parent tissue under the stimulus of the various internal secretions. Hobbs and Bortnick carry their argument a step further and suggest that some obscure benign and malignant tumours of the lung in women may be derived from a metastatic endometrial implant, but so far a study of 33 primary lung tumours has failed to demonstrate endometrial tissue.

THE ELECTRO-ENCEPHALOGRAM IN EPILEPSY

THE discovery that epilepsy is associated with paroxysmal outbreaks of high voltage in electroencephalographic records opened up wide fields for investigation. The sequence of these waves whether rhythmic or random, their constancy, their dominant frequency, their voltage, the percentage of time that they occupy on the record, the type of wave, the number of waves in each paroxysm, their localisation on the cortex, whether discrete, bilateral, multiple or diffuse must all be considered. Further studies would determine the effect upon them of physiological events, of pathological states, of drugs, of special diets and of hyperventilation, and endeavour would be made to correlate the findings with various types of epileptic attack and mental states associated with epilepsy. The field is an enormous one and a mass attack has recently been made into it by Jasper and Kershman [1] working at the department of neurology and neurosurgery at McGill University, Montreal. These authors present interseizure records of 468 epileptic patients. They divide the high voltage waves into random waves and paroxysmal rhythms, and suggest further subdivisions of these two great groups according to shape, pattern and frequency. From the point of view of localisation they classify their records into three groups: the localised unilateral cortical, where only a discrete area of the cortex is involved (50% of their series); the bilaterally synchronous from homologous areas of the cortex (35%); and the diffuse (15%). They find that the great majority of the localised unilateral cortical group have, in fact, fits with a focal onset, and this is especially the case with certain types and frequency of wave. In these cases a family history of epilepsy is uncommon. Operative procedure should be carefully considered and pneumoencephalography will often help in the decision. Slow bilateral synchronous waves occur in patients who lose consciousness at the onset of their attacks, whether petit mal or grand mal; the fits usually begin before adolescence and are called idiopathic. The origin of the waves is presumably deep-seated. Rather more frequent (6 per sec.) bilateral synchronous waves, usually bifrontal or bitemporal, are often associated with psychomotor attacks. These are the waves which are sometimes discovered in non-epileptic behaviour-problem children. Diffuse waves are usually found in patients subject to major fits without focal onset. As a generalisation, therefore, the pattern and localisation of the waves bear a close relation to the type of fits.

The real trouble with mass interpretation of electroencephalograms is that there are so many variables to be considered. In classifying the epilepsies the clinical variables require painstaking observation and on the side of the electro-encephalogram the polyglot of frequencies encountered, their size, shape, number and combination call for an equally experienced and conservative analysis. When the difference between the "between seizure" and the "seizure" record of the epileptic is considered it is not surprising that workers have mainly concentrated upon the distinct wave-forms encountered during clinical and subclinical fits. In this field the greater part of the work of Gibbs and Lennox [2 3] stands unchallenged as the classical reference point in the modern study of the epilepsies. Their correlation of the distinct patterns encountered in grand mal, petit mal, the petit mal variants, and in the jumble of the psychomotor epilepsies forms a basis for exact clinical diagnosis. Grey Walter [4] approached the subject from the other side, and studied the position of foci of abnormal waves in the between-seizure records of epileptic patients. He was able to show the relationship between the clinical pattern of attacks and the focus of abnormality; with McKissock he later showed that surgical removal of areas of focal abnormality did not benefit the patient, but that in fact epilepsy is a disease of the hemispheres as a whole. The biochemical approach to the epilepsies which has been made through the medium of the electroencephalogram by Lennox [5] and his co-workers, Williams [6] and others points to an underlying metabolic abnormality which may explain the relative unimportance of focal abnormality in the treatment of individual cases. Jasper and Kershman have done well to correlate so many data, and have added to our knowledge, but a final synthesis is not yet in sight.

SEX GLANDS AND BLOOD-PRESSURE

Two sets of facts are combining to direct attention to a possible influence of the gonads on blood-pressure. On the one hand are the well-known observations on the effects of adrenaline and pituitary extract in both man and animals; the low blood-pressures in Simmonds's and Addison's diseases and the high ones in basophil tumour of the pituitary and cortical tumour of the adrenals; the high systolic with low diastolic pressure so often found in Graves's disease; and a host of other observations linking blood-pressure with the endocrine system in general. On the other hand is the rapidly growing pile of observations linking the glands of the system so intimately with each other that diseases of single glands are hardly recognised and the term polyglandular syndrome has lost all meaning, since almost all glandular syndromes are "poly." Added to these general signposts are a few somewhat vague clinical observations, some of which have been misunderstood. Thus the frequent appearance of high blood-pressure at the menopause has been attributed to a deficiency of œstrogens, whereas the increase of pituitary basophil cells and adrenal cortical hyperplasia which occur at this period in animals make it much more likely that one of these glands is responsible. This supposition is supported by the observation that menopausal hyperpiesia in women is more common when symptoms suggestive of Cushing's syndrome, such as adiposity, hypertrichosis and carbohydrate intolerance, are also present. This type of high blood-pressure so often returns spontaneously to normal that it is difficult to assess the value of œstrogen treatment. Nevertheless, such treatment is rational, and until there is evidence of its uselessness it is clearly justifiable to exhibit œstrogens with a view to shortening the hyperpietic period and possibly of preventing the permanent changes which often occur. There have been reports of small numbers of patients not

1. Jasper, H. H. and Kershman, J. *Arch. Neurol. Psychiat.* 1941, **45**, 903.

2. Gibbs, F. A., Gibbs, E. L. and Lennox, W. G. *Brain*, 1937, **60**, 377.
3. Gibbs, F. A. *J. Pediat.* 1939, **15**, 749.
4. Golla, F., Graham, S. and Walter, W. G. *J. ment. Sci.* 1937, **83**, 137.
5. Nims, L. F. et al. *Arch. Neurol. Psychiat.* 1940, **43**, 262.
6. Williams, D. *J. Neurol. Psychiat.* 1941, **4**, 32.

of menopausal age whose blood-pressure has fallen after the administration of œstrogens, for instance by Guirdham,[1] but faced with many contrary experiences, such reports are bound to be unconvincing in the absence of full investigations and adequate controls. The situation of male hormone therapy is still less satisfactory. Steinach has long held the view that its rejuvenating effects, the existence of which is disputed by most observers, are due to widespread hyperæmia. With Peczenik and Kun [2] he claimed to have produced lowering of the blood-pressure in 39 out of 49 male hyperpietics. Their results were immediately challenged by Greene [3] who published accounts of a series of carefully investigated patients whose hyperpiesia had been unaffected by doses of testosterone propionate far larger than those used by the earlier observers. That the question cannot be left there is shown by the later claim of Edwards, Hamilton and Duntley,[4] who not only confirmed the increase in arterialisation claimed by Steinach but obtained amelioration of symptoms in three cases of Buerger's disease and four of arteriosclerosis. It seems probable that the good results of treatment with male hormone, if ultimately confirmed, must depend on the degree of irreversible change which has previously taken place in the arteries, as well as on the initial cause of the high pressure. In considering the latter, the work of Selye [5] and others on the nephrotrophic effects of testosterone and androsterone may well be significant.

FOR THE MERCHANT NAVY

THE controversy in the *Times* following Lord Marchwood's proposal in the House of Lords on Sept. 10 for a royal commission to inquire into conditions of service in the Mercantile Marine is on the familiar lines of the controversy about state medical service. But even if some of those who would like a commission are aiming at a national service they would probably leave the running and upkeep of the ships in the hands of private owners and would make a national responsibility only of the entry, training, supply and appointment of officers and men. There would be Government training and instructional establishments to supply young officers for the Merchant Navy exactly as in the Royal Navy. The personnel might stick to one shipping company for life, but they would be Government servants with a scheme of promotion, partly by service and partly by merit, with regular leave, retiring pensions and unemployment benefit. The conditions would be not unlike those in the public health services where the personnel are employed, with variations from the national mean, by local authorities. From the Speech from the Throne at the opening of Parliament in the autumn of 1936 we learned that the Government were considering measures "to secure the maintenance of a Mercantile Marine adequate for the needs of the country." Thoughtful observers of conditions in the Merchant Navy (non-medical as well as medical) have long been convinced that uncleanliness and discomfort have prevented many lads from going to sea. In 1902 Wm. Collingridge, then medical officer for the Port of London, said that the sanitary state of ships was 50 years behind that on shore. Herbert Williams, W. F. Dearden, W. E. Home and Howard Jones, in our columns and through the Association of Port Health Authorities, followed his lead in demanding what Greenwood Wilson, hon. sec. of that association, has aptly called "slum clearance at sea," but it was not until 1937 that the Board of Trade issued instructions to surveyors which went most of the way in fulfilling the recommendations of the association for improving crews' quarters, and even then any improvement of the old vessels was to wait for convenient opportunity. Would it be cynical to note that at about this time there was a serious shortage of merchant seamen? Two years later the National Maritime Board achieved a welcome agreement about cleanliness and comfort of crews' quarters, and some may claim that for this reason, amongst others, the board is well able to look after the interests of the merchant seafarer without the lead of a commission. Other bodies, such as the Ministry of War Transport, are working whole-heartedly to the same end. It is probable there were various persons and bodies interested in the welfare of the factory child-worker and of the prisoner before Shaftesbury and Howard focused popular attention on all the available and ascertainable facts and initiated great reforms. Surely no student of history can object to a scientific and Government-sponsored inquiry into the conditions of service of an industry so vital to the nation's welfare, at peace and at war, as the Mercantile Marine?

1. Guirdham, A. *Bristol med.-chir. J.* 1941, **58**, 19.
2. Steinach, E., Peczenik, O. and Kun, H. *Wien. klin. Wschr.* 1938, **51**, 102, 134.
3. Greene, R. *Lancet*, 1938, **1**, 79.
4. Edwards, E. A., Hamilton, J. B. and Duntley, S. Q. *New Engl. J. Med.* 1939, **220**, 865.
5. Selye, H. *J. Urol.* 1939, **42**, 637.

SCOTTISH HEALTH

WITHIN the past decade there have been obvious efforts to make Scottish health reports more readable and more timely in issue. The circumstances of war have diverted energies normally available for report making, and the summary recently issued in review of the period Jan. 1, 1939, to June 30, 1941 is, understandably enough, but an anæmic shadow. Much of its space is given over to an account of adaptation and preparation for war, of emergency measures such as casualty hospital provision, evacuation and related problems and health conditions in shelters. Some of these measures benefit the population of considerable areas, but it would have been interesting to have official information about the actual extent to which emergency hospital provision, for instance, has been used for relief of the load on voluntary hospitals or for improving the general level of hospital services when not required for the treatment of casualties, since there is a suspicion that much of it has been allowed to lie needlessly fallow. When judged by the ordinarily accepted indices, the health of Scotland in war-time is perhaps no worse than might have been expected. Tuberculosis has increased, and still seems to be increasing, but other infections, with the almost expected exception of cerebrospinal fever, have remained at pre-war levels. The increased incidence of tuberculosis calls for administrative action and it would have been comforting to have an official assurance that specialised institutional accommodation is immediately available for every sufferer from the disease who requires such treatment. The number of cases of cerebrospinal fever, not yet alarming, is a danger signal that cannot be ignored. Infant mortality has increased. In this matter Scotland has for long been worse off than England, and the Scottish figure for 1940, 78 per 1000 live births, is too high. The summary refers to recent legislation to widen the scope of National Health Insurance; but it is a matter for keen regret that it has been thought necessary to discontinue the illuminating reports on incapacitating sickness among the insured population that have come to be recognised as a peculiarly Scottish contribution to social medicine. Information on this subject would be of more than scientific interest in time of war, and it should be collected if at all possible.

At the request of the Prime Minister, Sir CHARLES WILSON, P.R.C.P., has joined the British Mission to Moscow. On his return he will report on Russia's need for medical help. According to a Reuter message the mission reached Moscow by air on Monday last.

Sir EARLE PAGE, who left Sydney on the same day to represent the government of Australia in Great Britain, is a medical graduate and a foundation fellow of the Royal Australasian College of Surgeons. He was Minister of Health 1937–38.

Special Articles

FIRST-AID TREATMENT OF BURNS

A. H. McINDOE,
M.B. N.Z., M.S., M.SC. MINNESOTA, F.R.C.S., F.A.C.S.
CIVILIAN CONSULTANT PLASTIC SURGEON TO THE R.A.F.; SURGEON IN CHARGE, MAXILLO-FACIAL UNIT, EAST GRINSTEAD

DURING the past year much thought has been given to the treatment of burns. This has culminated in recommendations made by the War Wounds Committee of the Medical Research Council after a prolonged survey of the results produced by various methods, under both civilian and Service conditions. It is not surprising that, considering the special causes and unusual types of burns encountered, these recommendations have modified established procedure, though not as extensively as many seem to believe. Careful perusal of the E.M.S. pamphlet (343)[1] will show that coagulation therapy, far from being condemned, remains an important method of treatment, particularly in the extensive burns of the 1st and 2nd degree on the trunk and extremities common in civilian life, where shock and toxæmia are liable to follow. Exception was, however, taken to its use in encircling burns of the hands and feet and in other areas of functional importance, such as the face, flexures, perineum and genitalia, where experience showed that undesirable complications might follow. It was not suggested that burns of all degrees in these special areas showed equally bad results when coagulated, for many have not done so, but certainly some of the more severe burns in which function has been endangered have been further compromised by coagulants.

Most competent observers will agree that it is relatively easy to distinguish between a 1st and 3rd degree burn, but often extremely difficult, even under the best conditions, to decide between those of the 2nd and 3rd degrees. If the surface is contaminated with dirt and oil it may be impossible to make an accurate diagnosis of any degree. This problem is much more acute at first-aid posts and advanced dressing stations, where cleansing facilities are often inadequate, light is poor, and examination is perforce superficial. When the patient is admitted to hospital the degree of involvement must be determined and the appropriate treatment decided on. It is thus vitally important that first-aid treatment should not compromise hospital treatment.

Experience shows that tannic acid is not a panacea for war burns, whatever its results in civil practice. It certainly takes its place, however, in the pattern of treatment which is being slowly evolved. This pattern has not yet reached finality. Alternative methods are still under investigation and it is not intended here to express dogmatic opinions as to their relative value. The wholesale distribution of tannic-acid preparations and vital dye coagulants to homes, first-aid posts and dispensaries has, however, created considerable confusion in the minds of many as to whether coagulants should be applied as a first-aid measure or whether other dressings should be substituted. The desire to make some sort of immediate local application to the burned area is strong, and admittedly the patient may be greatly relieved thereby. The ideal local application would be a quick-drying, flexible and elastic seal, incorporating bacteriostatic and anæsthetic agents. It should be painless to apply, and should resist, when dry, ordinary handling for two to three days without renewal and during that period prevent loss of tissue fluids and the entrance of organisms into the burned area. Especially, it should be water or oil soluble so that it can be easily removed at the hospital where adequate treatment of the burn is undertaken. Whether coagulation should be an essential part of its action is open to question.

None of the variety of suggested preparations exactly fulfils these requirements, and until the ideal substance is produced, obviously the simplest form of easily removable dressing is to be preferred. One can therefore agree with almost any coagulative or non-coagulative treatment which personal preference might dictate in the case of minor burns not requiring admission to hospital, but the first-aid application of any local treatment other than easily removable dressings to those major burns requiring hospital treatment should be discouraged. This is particularly true of those more positive coagulative agents applied hurriedly and inadequately over unclean surfaces in such a way as to be detrimental to the success of subsequent treatment in hospital. While there may be some disagreement between those who believe in universal coagulation and those who do not, they are united in the opinion that first-aid tanning of serious burns is a handicap to the definitive hospital treatment, because once they are applied the crust is difficult to remove.

The function of the first-aider is therefore, first, to distinguish between minor burns which do not require hospital treatment and to treat them efficiently; secondly to transfer major burns to the nearest hospital or burn unit as soon as possible, limiting treatment to measures of a general nature and to simple local applications, avoiding anything which may be difficult to remove.

The problem is not altogether simple, for while the majority of badly burned patients can be transported to hospital within a short time, it may be days before others can reach suitable hospital facilities. Thus first-aid may be required for burns at sea or in the desert under such difficult conditions that treatment considered inadvisable where quick transport is available might be desirable where there is great delay. An attempt is being made to suggest a reasonable first-aid programme adequate for burns of various types occurring under varying circumstances.

MINOR BURNS

A minor burn is defined as one of the 1st or 2nd degree, covering an area not greater than 1% of the total body surface—i.e., an area corresponding in the adult to one side of the hand or about 28 square inches. It should not involve any of the special areas already mentioned: the hands, face, feet, flexures, perineum and genitalia. Shock is not in evidence and sepsis is uncommon. Pain is usually severe. Healing is rapid by regeneration from the undamaged portion of the skin whatever local application is used.

General treatment.—If pain is not controlled by aspirin or Veganin, then morphine gr. ⅓–½ should be given (for an adult).

Local treatment where cleansing facilities are available.—Since these burns are not sent on to hospital, first-aid treatment is as a rule definitive. Whatever is applied should be regarded as the final dressing. Some form of coagulant is therefore safe, simple and satisfactory. Coagulation seals the surface, abolishes pain, prevents secondary infection, and enables the patient to carry on with his work within a short time.

If the burned area is likely to be contaminated, it should be carefully and gently washed, together with the surrounding skin, with soap and water. An application is then made of one of the coagulants in tube form, usually available at most first-aid posts, such as Tannafax, Amertan, gentian-violet jelly, or triple-dye jelly. It is either smeared directly on the burn or applied on a single layer of lint or gauze. Alternatively, the surface may be daubed with 10% tannic acid, 5% silver nitrate, or both, or painted with gentian violet 2% or triple dye (gentian violet 1/400, brilliant green 1/400, neutral acriflavine 1/1000). If tannic acid or silver nitrate is used no dressing should be applied over the burned area.

Non-coagulant dressings may also be used, such as Vaseline gauze, tulle gras, Ambrine, or soft paraffin, but care must be taken to ensure the sterility of the dressings. If sulphanilamide powder is liberally sprinkled over the burn before their application the risk of sepsis will be negligible, and possibly the rate of epithelialisation greater than with coagulant dressings. It is certainly true of the sulphanilamide, tulle gras, saline sequence now in wide use. Nevertheless, the coagulants have a decided advantage over non-coagulant dressings as a first-aid dressing for minor burns, in that once applied they do not require renewal or much aftercare and are not so liable to contamination from outside sources.

The newer preparations, such as Euglamide, a paste incorporating Albucid and a local anæsthetic, and the

1. See *Lancet*, 1941, **1**, 425.

water-soluble jellies containing sulphanilamide alone or in combination with an antiseptic, have given good results but are not altogether suitable for first-aid purposes, because of their messiness and inability to remain in situ for long.

Local treatment where cleansing facilities are not available.—Not infrequently, burns of this type are badly contaminated with oil or dirt, under such difficult conditions that adequate cleansing facilities are not at hand—for instance, at a thoroughly disorganised first-aid post, where the water has failed, in the desert, or at sea in an open boat. If any form of cleansing is impossible, it is foolish to coagulate a heavily contaminated burn of any type, and thereby seal up organisms on the damaged surface. In any case, the presence of oil will prevent coagulation. It might be pointed out that in the desert where mechanical transport is usually near, benzene or petrol are excellent cleansing agents, and are also practically painless when applied to injured surfaces. Under such circumstances, one of the non-coagulant dressings should be used, and if flies constitute a menace the whole area can be sealed off with a piece of oiled silk, or, if it is available, enclosed in a Bunyan-Stannard envelope. At sea, failing all else, a compress of sea water would be excellent provided it was kept wet.

CLASSIFICATION OF MAJOR BURNS

Burns of any greater extent or depth than minor burns or any burns of the hands, face, flexures, genitalia or perineum should be regarded as of major importance and dispatched to the nearest hospital or burn unit as soon as possible. As opposed to minor burns, the first-aid problem centres round the patient's general condition and the question of how soon he can be transferred. Local treatment is of secondary consideration except under unusual circumstances, and should be concerned only with the protection of the burns from further trauma and secondary infection. Major burns may be classified as follows :—

(*a*) Major burns without serious shock where transport is available. These form the majority of war burns and are easily dealt with.

(*b*) Major burns with serious shock rendering transport dangerous. There are very few cases of this type. They become noticeably fewer the greater the experience of the observer and the more prompt the transport arrangements.

(*c*) Major burns with or without shock, occurring in situations where transport is delayed or is not available. With severe shock every moment which passes before the administration of plasma or serum increases the risk to life. Hence it is better to undertake a difficult journey than to allow blood-volume to fall and hæmoconcentration to rise. Naturally these are difficult problems and much depends on local facilities, mode of transport and distance to the nearest hospital.

SHOCK

Although shock has been divided into primary and secondary forms the former is not commonly seen ; if it does occur it resembles a fainting attack due to neurogenic and traumatic factors. It usually passes off quickly under the influence of rest, heat and morphine.

True burn shock (called secondary shock) has all the characteristic signs of ordinary wound shock—rising pulse-rate and respiration-rate, pallor, thirst, anxious restlessness, falling blood-pressure, and so on. It must always be regarded as serious, for it is responsible for 60% of all deaths from burns. It may appear within an hour of injury but does not usually show itself for 6 hours or more. During this time the patient feels and looks well and may even have walked several miles to a dressing station with burns of the most extensive type. This is common in Service casualties. The detection of incipient shock in such cases is difficult without hæmoglobin estimations but the possibility of its clinical development, either slowly or suddenly, must always be borne in mind. Shock results from failure of the circulation in the face of hæmoconcentration and falling blood-volume. The "trigger" which usually induces it is rapid loss of body heat from exposure to cold or further trauma to the already injured skin surface. Undressing the patient to examine the burns in first-aid posts, or any rough handling of burnt areas, should therefore be sedulously avoided. As a rule there is a relatively safe period in the first 6 hours in which the patient, though severely burned, can stand a reasonably long journey (20–30 miles) by road ambulance. There are few cases to which this does not apply. The patient may suddenly become shocked during transfer, but this is not necessarily the result of the journey. It would probably have happened anyhow. The likelihood of shock supervening rapidly may be judged from the extent and situation of the burns, but as it is dangerous to undress a burned patient, only a very rough estimate of this can be made. In general, shock is liable to be serious if more than 25% of the body surface is involved. In estimating this percentage the following table may be useful :—

	Per cent.		Per cent.
Head	6	Entire front of trunk	19
Both hands	6	Entire back of trunk	19
Both arms	18	Thighs	19
Lower legs	18	Feet	6

Burns of the face, precordial area and abdomen are more dangerous than those of the arms, legs or back. The depth of the burn is not so important as its extent.

If for any reason there is delay at the first-aid post and shock is feared, the pulse and respiration should be noted every half hour, and the B.P. taken as often as possible. With burns of the hands and arms this may be impossible.

GENERAL TREATMENT OF MAJOR BURNS

Pain.—All patients with major burns should receive a full dose of morphine immediately (½–¾ gr. for an adult). Anything less is futile and the dose can be repeated. Many patients with severe burns are not conscious of pain until the shock phase is over but moderate burns without shock are usually extremely painful.

Shock.—If this is likely to occur while waiting for transport to arrive the patient should lie down on a stretcher or cot and be covered with blankets, with hot-water bottles to keep him warm. Unless the clothing is soaked in water or other fluids it should not be removed, and then only if something warmer can be substituted. Hot sweetened drinks such as tea or coffee should be given freely. Plasma or serum injection is rarely possible or advisable in first-aid posts, and if required should be obtained by means of a mobile unit from the nearest hospital. Rapid transfer of the patient to the hospital is certainly the better plan. In the Services, all station sick quarters, many advanced dressing stations and some ships are suitably equipped for intravenous therapy in the places where delay in transport is likely. Plasma should be used wherever it is indicated. The usual preliminary dose is two bottles of dried plasma or liquid human serum given according to M.R.C. Memorandum No. 1. This may in serious cases be increased to ten or twelve bottles.

LOCAL TREATMENT OF MAJOR BURNS

Major burns should not be coagulated as a first-aid measure. The local conditions are almost always totally unsuitable for this procedure and in the majority of cases more harm than good will be done. Burns on exposed parts dispatched forthwith to hospital should be powdered with sulphanilamide and covered with a sterile towel or wet compress of sodium bicarbonate or saline. Since contact with air is painful the burn surface may be more efficiently protected with simple vaseline gauze strips or tulle gras over the layer of powder. The Bunyan-Stannard oilsilk envelope is a useful added protection during transport, and indeed may be used alone for this purpose.

The problem of the burned patient when transfer to hospital will be delayed for days—e.g., at sea, in the desert or in isolated spots—is difficult, and will depend on the facilities at hand and the severity of the burn. For the patient's comfort it may be necessary to coagulate the whole area, in which case the vital dyes or silver nitrate 10%, which are themselves antiseptic, are most suitable. It will be best to avoid an anæsthetic if possible, for this will undoubtedly increase the risk of shock. Flies will usually constitute a major danger, hence the oilsilk envelope will have considerable value. First-aid treatment in these circumstances will constitute an unhappy compromise between what is possible and what should be done.

EUGENIC STERILISATION IN WAR-TIME GERMANY

THE Eugenic Law of July 14, 1933, still holds good in Germany. This law [1] sanctioned the sterilisation of anyone likely in medical opinion to transmit severe disease of body or mind; 8 such categories were named and severe alcoholism was added to the list; but on Aug. 31, 1939, an emergency decree was issued modifying the procedure of notification and laying down that during the war sterilisation was only to be applied where the danger of dysgenic progeny is especially grave. Should the patient be impotent or nearly so, should he be prevented from producing children by being in hospital, and so on, nothing need be done. The M.O.H. has to make up his mind on this question of urgency, but the final decision is with the regional health department through which all proposals for sterilisation must now pass.

This decree, it seems, has led to some slackening of eagerness in eugenic sterilisation, although a recent article in the medical press [2] emphasises that the decree makes no essential change in the law. Some test cases are set out to impress on the reader the strict views held by the special courts. Last year, for instance, the court refused an application for the sterilisation of a 27-year-old woman with schizophrenic symptoms on the ground that such women tend to shut themselves off more and more from the outside world and are unlikely to have sexual relations. But the appeal court reversed this decision, pointing out that in women with healthy genitalia mental aversion to intercourse cannot be taken as tantamount to sterility, for in medical experience the inhibition might at any time and without warning change to its opposite.

Three appeals against sterilisation orders give an insight into the working of the courts. The first deals with an acute attack of schizophrenia in a 31-year-old clerk, who in spring 1938 showed the first signs of mental instability. In August he consulted his doctor and was admitted to hospital with the symptoms of an acute schizophrenic psychosis: sleeplessness, excitement, dissociated speech, inane behaviour and delusional ideas. There were no physical signs. He made a quick recovery, returned home and after a short convalescence went back to work in the following December. Since then his behaviour had been normal and his work satisfactory. Two of his cousins were mentally defective and his father was a schizophrenic personality. Already in September, 1938, his sterilisation had been ordered on a certificate from the hospital officer. Appeal was made on the grounds that his nervous breakdown was without lasting effect and that his working capacity was undiminished. The court ordered a further investigation in a different hospital. This second report stated that in ordinary conversation he showed no trace of psychosis, no emotional or intellectual defect. His knowledge and intelligence were good; but tests proved that he did not grasp the significance of simple fables and proverbs and could not explain the moral of a simple didactic story. There were gaps and jumps in his thinking, typical remainders of a schizophrenia, often the only apparent symptom after recovery from an attack. As no psychological or physical cause of illness could be elicited, the court ruled out any doubt about the diagnosis of schizophrenia raised by the short and relapse-free course of the illness. It was not essential to prove any mental defect when statistical and text-book evidence before the court showed that 10–20% of admitted acute schizophrenic cases were left without symptoms or personality change. The typical picture at the time of the acute psychosis, and the disorder of thought demonstrated in the test afterwards, were sufficient to justify the diagnosis. The remission after the first attack (the article adds) is just the time when a recovered patient is thinking of marriage and the risk of progeny is gravest.

The second appeal was from a patient who had since 1932 complained of increasing hardness of hearing bordering on complete deafness. On the right side loud conversation is heard only at 40 cm., on the left at 20 cm. The cause is a pathological change in the bony envelope of the inner ear in the neighbourhood of the stapes. Air-conduction of sound is interrupted, bone-conduction at least as good as normal. The plea that she can hear well on the phone is typical of the disease. There have been no signs of inflammation in the middle ear during the last six years. Otosclerosis can therefore be diagnosed with certainty. Her mother also suffers from the disease, which must be regarded as hereditary. Not only complete blindness but any disabling loss of sight comes within the meaning of the act; similarly, hardness of hearing which makes employment impossible counts as deafness. The patient's appeal against the sterilisation order was refused.

The third case was one of chronic alcoholism without evidence of physical or mental damage. The patient, a 44-year-old book-keeper, underwent a "cure" in 1929. Since then he had been convicted 11 times, all his offences being caused by drink. The chronic alcoholic does not necessarily drink continually, and he may as yet show no physical symptoms of his indulgence, nor need he lack intelligence. But he is the carrier of an undesirable gene—weakness of will. Under the influence of alcohol he forgets what he owes his family and society. In spite of what he has been through this patient had not had the strength to give up drinking and carry out his duties like a healthy man. In this case, certainly the feeblest of the series from the point of view of scientific genetics, the court ruled that evidence of a family history of alcoholism was not necessary.

1. See *Lancet*, 1933, **2**, 557.
2. Paech and Trembur (Berlin) *Dtsch. med. Wschr.* July 18, 1941, p. 796.

In England Now

A Running Commentary by Peripatetic Correspondents

THE Home Guard Medical Officers' Course lately held at Cambridge was productive of many surprises, both major and minor. Among the latter was the discovery that afternoon tea is not served in Cambridge on the Sabbath. One of the pleasant surprises was the enormous usefulness of the course, which the bald syllabus had rather concealed by its copious use of incomprehensible initials, and the high grade of oratorical ability. Another was that even those of us whose limbs had lost their primal elasticity came successfully through a course which made no small calls on our endurance. It was long, it took no count of Sunday as a day of rest, but its interest sustained us so effectually that even when official lectures were at an end (and one of these began at 9.30 P.M.) we indulged in long discussions of our own (held, I must confess, in a common-room happily provided with malt liquors).

The object of the course was not so much the instruction of Home Guard M.O.s in their duties, although this was not entirely omitted, as the provision of a background which would inspire us with the urgent need for the energetic fulfilment of those duties. This background was sketched in by various techniques. We were lucidly instructed in the nature of an infantry division, its component parts and their several functions. Then the size and usefulness of an armoured division were laid before us, with full attention to its own particular difficulties, including, for example, the method of removing casualties from tanks, as well as the ways in which it was possible to compensate for the striking contrast between the highly mobile armoured vehicle and the would-be static casualty. The functions of the field ambulance were perhaps too lightly passed over and this is a point which might be elaborated in any future courses. We shall often have to make contact with such units and it would be well if we knew more about them. We were then treated—it was a treat—to a series of lectures by specialists on methods of attack and defence, including the latest information on gas warfare, the offensive use of the tin helmet, and the psychology of the German war machine. Two points were regarded as axiomatic by all speakers. The first was that invasion, including gas attack, was the logical development of the German war plan and that it was certain to occur unless a miracle happened on the Continent. The second was that, in case of invasion, the complete isolation of territorial units of various sizes for not less than seven days was to be expected. In other words, there would be no ambulance service to such units for this period. It is an important feature of the invasion picture that these

areas cannot be foretold beforehand, and will not necessarily be those in which preparation for isolation has already been begun. Which areas will finally be isolated depends more on the German general staff than on our own.

Then we got down to our own special affairs. Only one lecturer, or perhaps two, seemed to have any close acquaintance with the actual problems of Home Guard medical officers or even with the possibilities of the fighting Home Guard. We listened many times to detailed instructions about the use of facilities and equipment which we are never likely to possess. We heard almost nothing of how we might best make use of the rather meagre facilities afforded us, both in the training of H.G. volunteers and in equipment. These facts made a lecture on Home Guard tactics by the commanding officer of a Home Guard battalion tremendously welcome. It was a fine lecture and was one of the four which might have been expected to obtain most marks if we had been asked to vote on them. Three others came near the same mark. One of these, and this was another surprise, was the lecture on war surgery. Many books have been written on this subject but they have not been written for us. This lecture, by a consulting surgeon, dealt with stark realities in and near the front line. We were encouraged to make known our own difficulties, and even to pass resolutions to be put before the proper authorities. We learnt much; maybe we also taught a little.

* * *

One advantage of war is the opportunity it gives us of visiting places we would never have reached in the normal course of events. Recently we have been fortunate in seeing quite a lot of Spitsbergen (or should I say Svalbard?) Although I did not get up as far as the most northerly settlement, which is on the 79th parallel 660 nautical miles from the North Pole, and in which there is a hotel for holiday-making visitors, I spent an interesting day or two in the biggest settlement a few miles further south. In normal times two nationalities lived on the islands, but they dwelt sufficiently far apart for social intercourse between the two to be almost unknown. Except for a few trappers they worked the coal which comes out of mines placed high up on the side of steep mountains 2000–3000 feet high, dropping almost sheer to the sea. The biggest mine lay deep in a U-shaped mountain between two black scars cut into its side two or three miles apart, a scar on each arm of the U. One could go in at one entrance, walk round the mountain so that one came very near the surface on the opposite side, and emerge from the other entrance at the same height but on the second shoulder. It would be an unwise thing to do, however, for I was told one would have to go on hands and knees, the mine being nowhere more than four or five feet high. Most of the mining was done during the dark winter, the work of loading the coal on to the conveyor to be stacked on the quay for shipping being reserved for the unbroken daylight of summer. This type of mining seems to be as dangerous as deep mining, the risk of gas and fire being always present, while an explosion has been known to blow a considerable chunk of mountain-side straight out into the valley.

Several of the miners had lived there for twenty-five years and the local doctor told me he knew one or two who had not been back to the homeland for thirteen years, although most of them got away in the summer for a month to get some fresh air and keep in touch with the folks at home. Many of the younger men used to go up with the idea of working for a few years to earn enough money to return home, buy a farm and get married, but often the farm of which they dreamt proved a delusion, and having lost their money they went back for another spell in the north. There is a fascination about the place and I think many were finally caught by it and decided to make it their home.

Wildfowl abound, while other local supplies of food are gull and eider-duck eggs, cod and haddock and salmon and presumably whale-meat, although I did not see any hanging up outside the houses as one does in the Faröes. They keep their own pigs, a few horses and a few cows but for all vegetables they had to rely entirely on imports. Of the birds, I saw the big glaucous gull, arctic skuas, kittiwakes, and the apparently ubiquitous fulmar; and ashore, hopping about the paths and seemingly taking the place of the house-sparrow in England, were purple sandpipers. In the spring there used to be good skiing, and races down the mountain-side, but on my exclaiming to my friend the doctor that that must be the best time of year his reply was that they preferred the winter with its perpetual dark, when the ice kept any ships from disturbing them.

Of the people I met, two had claims to special distinction. One was the doctor from the settlement further north who considered he had the most northerly practice in the world. He is not long qualified and seemed to enjoy the life tremendously. The second was a trapper who came on board with some skins, a cheerful red-headed man who I later learnt had made a wonderful though unsuccessful journey of about 180 miles from West Spitsbergen to North East Land to find Nobile when he was stranded there in 1928. The fox-skins are really beautiful, most of them being white; but a few of the rare blue are trapped and fetch a big price in Europe. Polar bear and seal are also caught. Spitsbergen, land of rocky spires, with its glaciers sweeping irresistibly down to the sea, its fiords of great depth, its almost tangible silence, and its long months of darkness has a great and subtle fascination. Living was hard there, but these people gained contentment through mastering it. Some of them will have been sorry to exchange it for smoother parts.

* * *

"You know what he is doing?" said my colleague in the tone of one describing a nameless enormity, "he is advising half-a-dozen commercial firms, and I have heard he even takes a hand in the advertising of one of them!" "Why shouldn't he?" I asked. "Good heavens, man, he is a professor in a medical school and a qualified doctor. A fellow in that position should have no truck with anything commercial." I did not see this, and said so, with the result that the discussion tended towards the acrimonious. (After all, we know each other intimately.) I did agree that this kind of thing might occasionally lead to abuse, but that seemed no reason to condemn the practice any more than the existence of a few dishonest doctors can be taken as proof that all the profession is corrupt—even though some novelists may do so with impunity. I argued that if a commercial firm is engaged in any activity impinging on the field of health clearly they must have skilled advice, and many employ completely reputable doctors on a full-time basis. There are many occasions, however, when either some special problem arises or a full-time appointment is uneconomic. It is in the interest not only of the firm but of the public also that the advice they seek should be of the best quality. It is only fair that such advice should be remunerated. Q.E.D.

My colleague was unappeased, and while he was gathering breath for a counter-attack I swept on. This nolitangere view adopted by our universities and research institutions to commercial contacts and problems has, I urged, done the country a lot of harm. In German universities they adopt the reverse attitude. For example, I met a professor of international repute working in one of the research laboratories of the I.G. Company. I was a little surprised to see him, and really surprised when I learnt he was on the pay roll for a more substantial sum than the university paid him for his chair. He spent something like three long afternoons a week in his department and the remainder of the time in the commercial laboratory. The arrangement suited both sides—the university obtained the services of a first-class man for a much smaller salary than they would otherwise have had to pay, and the company had the kudos of a professor of high standing on their staff. This case was only one of many, and I think the system was one of the chief reasons for the advanced position which German industry held in so many fields before the war. It was also the reason why they could provide so many ersatz substances to replace materials obtainable only from abroad.

I should like to see our universities setting up departments of industrial coöperation each according to its special facilities. These departments would be available in an advisory capacity to commercial firms or trade associations. Research on specific problems or the general basic problems of the industry could be carried out. Fees could be charged for advice which would be split appropriately between the university and the

department staff. But perhaps most important, students both undergraduate and postgraduate would be trained in the actual problems of an industry which they would later enter. Some industries have already set up machinery which approximates to the idea in some directions at least—for example, in wool research and rubber research—but the idea is capable of much wider application. Bristol could specialise in physical problems, Manchester in chemistry, Leeds could have a department of wool technology and dyeing, Sheffield could extend its metallurgical work still further, and London would be a centre for economic consultation. Edinburgh ought to be a special centre for pharmacological investigation and Aberdeen might take on the food industry. The educational pundits will raise their hands in horror at such a plan, and maintain that the sciences must stick to fundamentals and eschew practical applications. The best answer to them is Aberdeen's motto "They say, what say they, let them say." The universities can no longer dream quietly; they must adjust themselves to the impact of events. We do not need to become soulless pragmatists, but we must be practical.

* * *

Somebody remarked of Florence Nightingale that she was a sharp-tongued, fierce virago battling for reform with ruthless passion. This may be a little strong, but so was Miss Nightingale. She interfered continually with what today is described as politics and did not hesitate to procure ventilation of official incompetence, being quite unconcerned at the risk of so-called scandal. It would be interesting to trace the exact point in history which led to the perversion of her story into the mushy and phoney fiction of the "Lady of the Lamp." One thing is certain—she would have trounced those present leaders of the nursing profession who adopt the conventual vocation attitude. I know of few practical nurses who share the opinion of one of the great Dames of the nursing profession who informed her junior colleagues that they were "God's own little gentlewomen" and proceeded to warn them that any combination on their part for the advancement of professional and economic status was improper and, by inference, against His wish. The nursing profession has been in a position of increasing danger for the last decade. Today it is not only a danger to itself but to the nation too, by reason of its inadequacy in numbers and organisation to serve the expanding needs of war. The nurses, just as the doctors, can scarcely expect anybody else to put their house in order for them. What is usually called the rank and file is ready to support any strong and active lead. The pity is that those who are already in a position to settle nursing on an equal footing with other women's professions content themselves with appeals founded on a platitudinous sentiment and shy with a skittishness unbecoming to their years away from the words "salary" and "working conditions." If they would intersperse Milton along with their pious thoughts I would recommend these words of his:

> I cannot praise a fugitive and cloister'd vertue, unexercis'd and unbreath'd, that never sallies out and sees her adversary, but slinks out of the race, where that immortal garland is to be run for, not without dust and heat.

* * *

That penicillin paper made one think. What is being utilised? An ancient feud between cocci and mould, started perhaps on some dead saurian's flesh, a thousand ages ere they were to be a mammal's guests or chanced on bread of merely tertiary man? Hundreds of these antagonisms must have been formed in that fierce mycotic struggle, started not long after earth's cooling surface caught the emanation of life. Do the bigger fungi have these hatreds too? Do men who eat mushrooms not get mumps? Do blewits and bolets protect against the 'flu? I don't know that they don't. What a subject for a vast investigation, for the organisations of those princes of prescience, Rockefeller and Nuffield. "Ah, Sir, what have you? A touch of carcinoma? We'll soon put that right, but you must take a peck of common morel. And you, Ma'am, for your child's diphtheritic croup, I know an ancient enemy of this, a white mould growing on a long-cast boot." Of course, botanically speaking we shall be sinking below the level of the herbalist to that of the messy mycologist.

Letters to the Editor

MEDICAL ASPECTS OF BOXING

SIR,—Your review and annotation of June 14, on Dr. Jokl's "Medical Aspects of Boxing," leave me with the impression that the writers could not have read the book with care, for the main facts on which Dr. Jokl relies for his conclusions are imperfectly stated and in some instances misrepresented. Perhaps your readers will be interested to learn how Dr. Jokl came to publish the results of his scientific investigations in book form.

In July, 1939, the annual conference of the South African Association for the Advancement of Science was held at East London. At one of the meetings (at which I presided) Dr. Jokl delivered an address on the medical aspects of boxing. The results of his investigations and the conclusions arrived at were so important and astounding that he was urged to publish his findings in book form. The present book is the result of that request.

Since 1939 Dr. Jokl has added many new facts in support of his thesis—that "in boxing the typical accidents are inherent to the sport as such and can, therefore, only be eliminated by the abolition of this sport. . . . Special consideration must be given not so much to the question of accidents, which always occur during sport and recreational activities, but rather to the problem of the intrinsic dangers inherent in boxing. There is not the slightest doubt that all the educational benefits derived from boxing can be achieved equally well through sports which do not constantly endanger health and efficiency of the central nervous system." It surprises one that the common sense of the man in the street has not long ago stumbled on the discovery that boxing is inherently dangerous. The sole object of each boxer is, by all the physical force at his disposal, deliberately to inflict such injury to the head, the heart and other vital parts of the body of his opponent as would cause unconsciousness or incapacity to continue the fight. The opponent's head is the main object of attack in this so-called sport, whereas in other forms a ball is usually the concern of the contestants, and should fatal results follow they are not "deliberately" intended, as in boxing, but are accidents in the proper sense of the term.

In view of the truths that science has revealed as to the nature and consequences of the injuries inflicted and intended in boxing, our law courts will have to revise their conception of the criminal liability of the person who has caused the death of his opponent and of those associated with him. Undoubtedly, due to the popularity of this so-called sport and the rules controlling it, our courts have dealt leniently with the accused person. The doctrine of "volenti non fit injuria" was held to apply. It was, however, not sufficiently realised that he who deliberately causes and intends to cause an injury which probably would have fatal results should be held to be responsible for the natural and intended consequences of his act. The boxer, therefore, in future cannot escape the full implications of the law, and, what is more, those who pander to the sadistic tendencies of human nature by staging prize fights solely for financial gain should be held criminally liable as accessories before the fact or as accomplices. No-one would dream of contending that the duellist who is quick on the trigger and kills his opponent would not be guilty of murder.

In South Africa, Dr. Jokl's book has been received by scientists with approval, and the only criticism which has appeared has come, as was anticipated, from persons who either make their living out of boxing or who are financially interested in this so-called sport. The facts disclosed and the conclusions arrived at have not been questioned by any scientist of standing; resort has been had to the usual red herrings—that fatal accidents also occur in other forms of sport and that none would advocate their abolition for that reason, or that the research has not been sufficiently comprehensive to justify the total abolition of boxing.

It cannot be correct to assert that "fatal cases hardly ever escape public attention." The reason why the public is kept in ignorance of the great many fatal cases that do occur is very simple, when one remembers that every device is employed, especially by those who are

financially interested in boxing, to uphold its popularity either by suppressing facts or by obtaining a death certificate which would preclude the necessity of a public inquiry. One can only wonder at the fact that so many fatal cases, directly due to injuries received in boxing, have received any public attention at all. Popular press reports are valueless in establishing the frequency of the occurrence of any such event.

It is satisfactory to note that your annotator admits "that it might be wise to forbid it [boxing] to special categories of men, such as air pilots, who need all the mental alertness and neuromuscular coördination they can get." But why confine it to special categories of men if, in fact, it is dangerous? It may be conceded that the inherent dangers of boxing may be minimised by, for example, increasing the weight and size of the gloves, but that would be staging a pillow fight—it would not be boxing as popularly understood—and no-one would pay a large sum to witness such an exhibition, or be attracted to such a tame sport without a "knock-out blow"; that is, after all, what the public come to see.

Dr. Jokl has done a great service in boldly exposing the inherent dangers of boxing, and no parent or teacher of physical training should fail to study his case-histories and conclusions.

Pretoria, South Africa. F. E. T. KRAUSE.

SIR,—I have read with interest your editorial comment on Dr. Jokl's book. Boxing is either a good sport or a bad one and I cannot make out from your annotation which category you favour. Your remark that "it might be wise to forbid boxing to special categories of men, such as air pilots, who need all the mental alertness and neuromuscular coördination they can get" seems to indicate that you are in favour of the abolition of this sport. I shall be glad if you will explain the reasons for this conclusion, for the critical tone of the rest of your annotation does not bear this out.

JACK PENN,
Johannesburg. Major S.A.M.C.

*** Boxing may be a good sport but, like love, it acquires an evil smell when it becomes a business proposition. Amateur boxing has merit in harmonising courage and self-control. As a training in self-defence, boxing is popular with the police and the military. But that has no comfort for the poor loons who get punch drunk in the ring for other people's profit.—ED. L.

EXCLUSION OF NEUROTICS FROM THE FORCES

SIR,—The incidence of acute neurosis in the Services is extremely low, and the number of men who break down under the acute stress of war is very small, a fact well illustrated after Dunkirk. In almost two years 2045 Service patients have been admitted to a special centre where neurotics are concentrated, and 80–90% of these were cases of chronic neurosis which could in no way be described as war neuroses. They are the chronic neurotics of peace-time who have broken down as a result of trivial stresses, such as inability to bear Army discipline or separation from their families, and they are admitted to hospital with an exacerbation of their chronic neuroses. Some were able in peace-time to carry on in spite of symptoms; in the Army they are unable to do so. They report sick, are seen by a command psychiatrist, and are admitted for treatment. They show an almost monotonous repetition of symptomatology, and their treatment is enough to break the heart of able and experienced psychiatrists. Moreover, many chronic neurotics have an extremely bad effect on the better patients in hospital, being chronic grumblers, unwilling or unable to make any effort to return to Army life. Most of them should never have been passed by the medical boards. In addition, men suffering from chronic neurosis are sometimes admitted who were doing skilled work of national importance before being called up; they are unable to do the work in such units as the Pioneer Corps, to which they are often posted, and are admitted to hospital because of an exacerbation of their neuroses.

This waste of man-power, apart from waste of money and time, could easily be avoided. In the United States a circular has been issued to physicians of medical boards who are not psychiatrists, briefly presenting the main symptoms by which they can recognise psychoneurosis, neurosis or organic diseases of the nervous system (see *Lancet*, May 17, 1941, p. 633). Should the examining physician suspect any neurotic disorder, he sends the man for expert psychiatric examination. By this means many chronic neurotics are eliminated before they have the chance of being enlisted. If more care were taken in England at the time of medical examination (one epileptic had enlisted five times), the number of admissions to hospital for neurosis could be drastically curtailed and much trouble to the pensions authorities avoided; moreover, psychiatrists attached to special neurosis centres would have time to act in an advisory capacity to medical boards, and so prevent this large group of chronic psychopaths, anxiety states, hysterias, mental defectives, epileptics, &c., from being passed into the Army.

A follow up of chronic neurotics invalided from the Army and living in the London area has been begun. It was thought that when these patients were invalided out their more acute symptoms would disappear, and this was found to be the case. In fact, they were restored to their pre-war neurotic level, and said they felt as fit as usual. Yet social workers found that some who before enlistment had had good work records were now unable to hold down jobs similar to those which they had been doing in peace-time. If this finding holds good for a large number of cases, it provides another important reason for excluding the chronic neurotic from the Services.

The remedies seem to me to be as follows:

(1) That recruits with a history of neurosis should be required to produce a letter from their family doctors or a hospital stating their history, family or personal, of neurosis or psychosis, fits, mental defect or backwardness. If a man produces any such evidence or the examining doctor finds any sign of oddness, personality disturbances or psychopathy the patient should be referred to a psychiatrist, preferably, one who has had experience with the neurotic under Service conditions, who will decide as to his fitness for military service. It does not follow that all chronic neurotics will be rejected—many of them are suitable for particular trades in the Army, and can release other men who are efficient fighting units. This is already being done under a War Office training scheme with many inpatients who would formerly have been invalided out. The argument that many recruits would use this letter to avoid military service is not valid, since a man bringing such a letter would be referred to a competent psychiatrist who would decide whether he was fit or not. In several cases recruits have brought letters from psychiatrists, but the letters have been ignored and the men passed A1.

(2) That all doctors on medical boards who are not psychiatrists should be issued with a circular like that used in the U.S.A., giving the symptomatology of personality defects, neuroses and psychoses concisely and simply, and also telling how to examine the patient from the psychiatric point of view, and what to look for.

Obviously such a document as I suggest must be highly confidential; in America the contents became known and in some cases recruits anxious to avoid service knew the answers beforehand. But I believe by some such means admissions to neurosis centres could be cut down by half.

Sutton. LOUIS MINSKI.

FIRST-AID FOR EVERY SOLDIER

SIR,—Your leader of Sept. 13 has made a very sensible suggestion which is based apparently on the observations of an anonymous lance-corporal. Now lance-corporals in the nature of things have not much knowledge of the Army apart from their own unit, and would not be likely to know if other troops had received instruction in first-aid. It is a fact that in the division with which I served in France all ranks had received such instruction before proceeding overseas. I have reason to believe it is usual to give divisional troops an inkling of the basic principles of first-aid. The regimental medical officer is the man to do it, not the subaltern who already has enough on his plate. I do not think it is a good idea to hand out Mr. Keogh's cards with diagrams and brave words, however well intentioned. The soldier of today has to be approached in quite another manner which may be left to the discretion of the R.M.O., who should know the men he is dealing with.

Manchester. W. A. RAMSAY.

INTRACAPSULAR FRACTURES

SIR,—In your annotation of Sept. 13 you refer to a commission set up by the American Academy of Orthopedic Surgeons, which reported bony union in 90·1% of cases of intracapsular fracture of the femoral neck treated by pinning and followed up for one year. You then refer to an article of ours in the *British Journal of Surgery*, quoting our results as 58·7% bony union. But close inspection of our figures will reveal that bony union did actually occur in 70% of cases followed up for one year. Seventy-five cases were reviewed, but 4 died shortly after the operation and a further 8 could not be followed up either because of death from other causes, in the years intervening between the operation and the follow up, or because (in 2 cases) the patients were never traced. Forty-four cases of bony union out of 63 cases is 70%.

ARTHUR L. EYRE-BROOK,
KENNETH H. PRIDIE.

Bristol.

SOLDIER'S DEFENCE AND PUBLIC'S ATTITUDE

SIR,—Dr. Clifford Scott's paper is very interesting but a trifle vague; perhaps that is inevitable in a subject like psychology, but I feel there is excuse for commenting on some of his statements.

Before the last war, he says, the valorous soldier was considered to be fearless, the implication being that other views hold the field now. There has, of course, always been a school of thought which held, and still holds, that fearlessness and courage are more or less the same thing; as indeed they are, if by courage is meant an ability to do dangerous things without being afraid, or appreciably afraid. By afraid in this connexion one means something more than merely that state of mind which prompts one to take precautions. There is also, and always has been, a rather more subtle school maintaining that the truly brave is he who does dangerous things in spite of intense fear; and if we like to define courage in that way there appears to be no objection, provided we are consistent. Thirdly, there are, and always have been (at least for many centuries), those who believe that human behaviour is determined by the ultimate laws of nature, and therefore courage is merely a convenient name for one of the characteristics of Homo sapiens. You pays your money and you takes your choice of these views, according to your temperament, intelligence, upbringing and so on.

The point is that, in my submission, none of them is new, and none has greatly lost favour; it is not clear that there has been anything amounting to a complete change in the public's attitude. The public still believes in cowardice, as it does in sin, and it is likely to go on doing so, not because of the truth or otherwise of these conceptions but because they provide a practical rule-of-thumb for obtaining certain results. Just as murderers are hung pour encourager les autres (or, if revenge enters into it, that is presumably a primitive mechanism designed for the same purpose), so cowards are shot on the field of battle (and will continue to be shot, all the psychiatrists in the world notwithstanding), because it is sometimes the only way to produce the desired effect. There are, rather naturally, times when no milder stimulus than the fear of being shot in the back will suffice to override the stimulus of the fear of being shot in the front. Doubtless in many cases the fear is not a fear of death pure and simple but of something more complicated, perhaps rather of the manner of dying. If I understand Dr. Scott, there is no such thing as fear of the unknown, but only fear of a repetition of the known, or something like it. The result is unfortunately the same in this case.

W. E. HICK.

Newcastle-on-Tyne.

FIRST-FIELD DRESSING

SIR,—Your timely and encouraging leader "First-aid for Every Soldier" prompts me to draw attention to one pattern of first-field dressing which has been issued to the Forces.

In a lecture on first-aid which I gave recently to a platoon of Home Guard, I invited one of the audience to come to the platform and show us how he would apply his field dressing. He stripped off the layer of Cellophane, loosened one end of the brown calico outer cover by breaking the thread which secured a flap, and withdrew one of two dressings, each encased in waterproof white calico. The package resembled a sealed letter-card, and nothing seemed simpler than to tear off the half-inch strip which ran along three sides. However, he paused to read the instructions: "Tear apart the uncemented corner as indicated by the arrow." For several minutes he wrestled with the packet, but to no purpose. The corner indicated by the arrow was not "uncemented" enough. Finally, very red in the face, he grasped the dressing firmly in one hand and with a mighty effort managed to tear open one end of the cover. The whole performance took about five minutes. I later tried to open three similar packets and had the same difficulty with all of them. I can well imagine that a soldier whose hands might be tremulous in the excitement of battle or benumbed by frost would find it utterly impossible to open one of these dressings. I hope the products of other makers are more amenable.

May I suggest that every medical officer in the Forces should pick at random a dozen of his men and see whether they have any difficulty in opening their first-field dressings?

STANLEY ALSTEAD.

Glasgow.

GLYCERIN-GELATIN BASE

SIR,—The title of our article of Sept. 13 (p. 329)—A Glycerin-gelatin Base for Irradiation Dermatitis and Burns—may be open to misconstruction. The base for which the formula is given was first employed by me some years ago in the treatment of ordinary burns. As tannic-acid jelly has been widely employed in the treatment of both thermal burns and moist desquamation of the skin following irradiation, the attempt to treat the latter condition by the glycerin-gelatin compound seemed logical. The advantages claimed for the preparation have been amply demonstrated for both types of lesion.

PERCIVAL P. COLE.

London, S.W.3.

BULLETIN OF WAR MEDICINE

SIR,—In your annotation on Anglo-Russian alliance in medicine (*Lancet*, Sept. 20, p. 344) you refer to the journal which the Tropical Diseases Bureau of the Medical Research Council has been publishing for more than a year as *War Medicine*. May I remind you that the actual name of the journal is *Bulletin of War Medicine*; it should not be confused with the recently produced American publication *War Medicine*. The bulletin is edited for the M.R.C. by the Bureau of Hygiene and Tropical Diseases under the direction of Sir Harold Scott, but this bureau is not part of the organisation of the Council, and the bulletin is not concerned, except incidentally, with problems of hygiene and tropical diseases. These are dealt with by the two other publications of the Bureau: the *Bulletin of Hygiene* and the *Tropical Diseases Bulletin*.

CHARLES WILCOCKS.

London, W.C.1.

PLUMP TYPE OF GRAVES'S DISEASE

SIR,—I have read with much interest Dr. Trotter and Mr. Eden's paper on this type of Graves's disease, especially with regard to the high mortality of subtotal thyroidectomy—namely, two cases of sudden death out of seven operated on. At autopsy generalised lymphoid hyperplasia was found and apparently no other cause. They say in their paper "The cause of the two deaths was not apparent but since their condition deteriorated after a brief period of respiratory embarrassment these patients may be unduly susceptible to anoxæmia." Unfortunately no more clinical details were given and I wish to suggest that the patients died from interstitial emphysema and pneumothorax.

This mediastinal emphysema arises from the neck incision, especially in those cases which have a drainage-tube in them and the pneumothorax is bilateral and will rapidly cause death. An excellent paper on this condition by H. J. Barrie (*Lancet*, 1940, **1**, 996) gives clinical and post-mortem details. The condition will be overlooked at the post-mortem examination unless each pleura is opened under a water seal for issuing air. This to my knowledge is not done usually at routine sections. I believe that this condition will probably explain some deaths on the operating table during thyroidectomy, as it is overlooked in the general excitement to perform

(*Continued at foot of next page*)

Obituary

HENRY ASHBOURNE TREADGOLD

C.B.E., M.D. LOND., F.R.C.P.; GROUP-CAPTAIN R.A.F. (RETD.)

Group-Captain Treadgold, who died suddenly on Sept. 15 in his 58th year, was the son of Dr. F. C. A. Treadgold, who practised at Southport.

He was educated at Fettes, Cambridge and King's College Hospital, London, where he won scholarships and qualified in 1909, taking the M.D. Lond. in 1912. He acted as casualty officer at the Royal Free Hospital, medical Sambrooke registrar at K.C.H. and assistant superintendent of laboratory at the Brompton Chest Hospital. In 1914 he joined the R.A.M.C., served as sanitary officer at Colchester, went to France with the 48th Brigade and later to Mesopotamia, being mentioned in dispatches. On the formation of the R.A.F. Medical Branch in August, 1919, he was granted a permanent commission as squadron leader. After three years in the medical directorate of the Air Ministry he was D.P.M.O. in Iraq 1921–24 and then served at medical headquarters, first as president of the medical board and from 1931 as consultant in medicine until his retirement owing to ill health in June, 1936. His name appeared among the Birthday Honours that year, and in the following year he was elected F.R.C.P.

Treadgold was a man of exceptional ability who excelled in whatever he undertook, both at work and in pursuit of his hobbies—fishing and gardening. He set himself a high standard of efficiency and expected it of others. Logical, quick-witted and incisive, he made an ideal president of the Central Medical Board. To those who worked in close contact with him he was a loyal and inspiring colleague, qualities which earned their affectionate regard. The superficial attitude of indifference which he assumed concealed a sensitive nature and a kindly disposition.

In 1909 he married Evelyn Diana Landor, who survives him with one son and one daughter.

Public Health

From the School Reports

GLOSSOP

The chief matter in Dr. Marcus Milligan's 1940 school report is the description of a new functional test for nutrition and the record of the results obtained from it. The test is devised to demonstrate loss of strength and endurance by bringing into play the anti-fatigue powers of the body; it being presumed, in our opinion justly, that anti-fatigue would be the first composite function to show the effects of insufficient nutrition. The original test was the length of time a child could support itself on a horizontal bar, but as this gives undue measure to handgrip and hanging power, it was abandoned in favour of pulling up a counterpoise of equal weight to the child's body. Dr. Milligan says that to judge the physical condition of children by any tests we must have standards and for this reason he includes standards, so far as he has been able to obtain them. Since, however, the main value of the test is to show *alteration* of power, the actual standard must be that of the individual child on some given date and the test must be repeated at intervals, for it is a dynamic function which is to be measured. The test has the merits of simplicity and comparative freedom from upsetting psychological interferences, and shows promise of being of considerable value.

NORTHANTS

Dr. C. M. Smith, school medical officer for the county, had three special surveys in January, May and October of the heads of native and received children. The percentage of those with nits (or worse) was: for natives, 4·3, 4·0, 4·6; for evacuees, 5·5, 3·6, 5·8. The seasonal variation of the natives has been usual in all parts of the country for the past 30 years; the variation for the evacuees is due to receiving householders being faithful in cleansing their guests without realising that to keep heads clean is a continuous process.

(*continued from previous page*)

artificial respiration. If it were borne in mind, a rapid aspiration of air from both pleuræ should save life.

I have been unable to trace any cases which have been saved by this prompt and simple measure, and would like to be put in touch with any known recorded successes.

City General Hospital, Leicester. A. P. M. PAGE.

Infectious Disease in England and Wales

WEEK ENDED SEPT. 13

Notifications.—The following cases of infectious disease were notified during the week; smallpox 0; scarlet fever, 1005; whooping-cough, 2710; diphtheria, 917; paratyphoid, 141; typhoid, 49; measles (excluding rubella), 808; pneumonia (primary or influenzal), 466; puerperal pyrexia, 151; cerebrospinal fever, 118; poliomyelitis, 36; polio-encephalitis, 4; encephalitis lethargica, 1; dysentery, 94; ophthalmia neonatorum, 83. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept. 10 was 1279; including scarlet fever, 128; diphtheria, 245; measles, 41; whooping-cough, 484; enteritis, 19; chicken-pox, 30; erysipelas, 24; mumps, 6; poliomyelitis, 1; dysentery, 16; cerebrospinal fever, 19; puerperal sepsis, 16; enteric fevers, 40; german measles, 2; polio-encephalitis, 2; other diseases (non-infectious), 41; not yet diagnosed, 65.

Deaths.—In 126 great towns there were 2 (1) deaths from enteric fever, 2 (0) from measles, 3 (0) from scarlet fever, 15 (3) from whooping-cough, 22 (0) from diphtheria, 25 (3) from diarrhœa and enteritis under 2 years, and 8 (0) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 1 death from enteric fever. Sunderland and Cardiff each had 3 deaths from whooping-cough. There were 3 fatal cases of diphtheria at Sheffield.

The number of stillbirths notified during the week was 185 (corresponding to a rate of 36 per thousand total births), including 16 in London.

Medical News

University of Leeds

At recent examinations the following were successful:—

M.D.

L. A. Westwood.

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—A. M. Bowler, S. Keidan, Bertha Klempman, E. O. Lawton, J. Lees, D. Levi, J. Lyons, Kathleen M. Peckett, C. Reichman, B. Sidman, G. H. Templeman, Jean M. Terry Thomas, D. Velinsky, L. Walsh, J. L. C. Ward, and A. Wertheimer.

University of Durham

Dr. F. J. Nattrass has been appointed to the chair of medicine in the university.

John Frederick Nattrass graduated in medicine with first-class honours from the University of Durham in 1914 and was awarded the gold medal for his M.D. thesis in 1920. He has held lectureships in medical jurisprudence, and lately in therapeutics in the university, and he has examined in pathology for the Conjoint Board and in forensic medicine for the University of Manchester. He was appointed to the staff of the Royal Victoria Infirmary in 1921, becoming full physician in 1935, and since 1931 he has been physician to the Newcastle General Hospital. He is also neurologist to the Newcastle Throat, Nose and Ear Hospital and to the Eye Hospital, and since the outbreak of war has been regional consultant in neurology to the Ministry of Health. Dr. Nattrass was elected F.R.C.P. in 1931. His book on the Commoner Nervous Diseases was published in 1931 and he has contributed articles on muscle diseases and narcolepsy to the British Encyclopædia of Medicine.

A.T.S. Appointment

Miss C. M. Hawkes, organiser of physical education under the Barking and Walthamstow education committee, and a member of the Ling Physical Education Association, has been appointed to take charge of the physical training in the A.T.S., with the rank of senior commander.

Royal Society of Medicine

At the section of the history of medicine on Wednesday, Oct. 1, at 3.30 P.M., Sir Walter Langdon-Brown will read a paper on John Caius and the revival of learning, and Dr. H. P. Bayon on Paracelsus and the Rosicrucian romantic legend. On Oct. 4 the section of physical medicine will meet at Oxford. At noon Prof. H. J. Seddon and Dr. Basil Kiernander will demonstrate cases at the Wingfield Morris Hospital; at 2.45 P.M. Surgeon Lieut.-Commander John Bunyan, L.D.S., will show a film on the treatment of burns; and at 4.15 P.M. Lieut.-Colonel R. W. Armstrong will give a demonstration of electrically induced convulsive therapy.

Until further notice the library of the society which opens at 9.30 A.M. will close one hour before blackout.

Dysentery in Edinburgh

A small outbreak of dysentery has occurred in part of Edinburgh and the infection has been traced to a dairy farm on the south side of the city. An order has been served on the farm to cease selling milk and butter. All except one of the households where the 25 cases occurred obtained their milk from this farm.

Chadwick Lectures

On Tuesday, Oct. 7, at 2.30 P.M., the first lecture in the 29th annual series of Chadwick public lectures is to be given at 26, Portland Place, London, W.1, when Mr. V. Zachary Cope will speak on the influence of war on surgery.

Pathological Demonstration

On Thursday, Oct. 9, at 3 P.M., Dr. W. Pagel will give a demonstration of some cases observed during the past year in the pathological department of the Central Middlesex County Hospital, Acton Lane, N.W.10.

Maternity Leave in the Civil Service

Under an agreement reached between the Treasury and the National Whitley Council, married women civil servants, permanent and temporary, will be entitled to maternity leave.

Medical Casualties

Surgeon Commander A. N. Forsyth, M.B. Aberd., R.N. and Surgeon Lieutenant R. M. Calder, M.B. Glasg., R.N.V.R., are reported to be missing, presumed killed.

Captain I. M. G. Stewart, M.B. Lond., R.A.M.C., and Lieutenant L. F. Smith, M.B. Edin., R.A.M.C., have been posted as prisoners of war.

Royal College of Nursing

The college has set up a reconstruction committee, under the chairmanship of Lord Horder, to consider the immediate steps necessary to carry out some of the Athlone Committee's reforms and to promote more advanced schemes of nursing. The British Medical Association, the British Hospitals Association, the Incorporated Association of Hospital Officers, the Association of Hospital Matrons, the County and County Borough Hospital Matrons Association, the National Association of Local Government Officers, the Women Public Health Officers Association, the Nuffield Provincial Hospitals Trust, the Medical Women's Federation, the King Edward's Hospital Fund for London, and the Society of Medical Officers of Health will all send representatives to the committee, half of whose members will be nurses representing the various branches of their profession.

Planning at Bath

Health education and finance were tackled by a conference on the reconstruction of post-war Britain which met in the pump-room at Bath on Sept. 7 under the presidency of Mrs. Mavis Tate, M.P. Mr. R. S. Trueman, F.R.C.S.E., who opened the health session said that the great difficulty of our present hospital system was the provision of treatment for the middle classes. He advocated the setting up of a royal commission of five members all under 40 years of age to consider the problem. He thought we needed a regional national hospital system with each region run by a hospital officer; hospital staff appointments should be made by a board of university professors who would be outwith local politics. He also proposed the enlargement of the hospitals and the closure of all nursing-homes. The hospitals would be open to everybody and each should pay what he could afford. Mr. C. E. Kindersley, F.R.C.S., though it best to plan on what we have at present and not try to sweep away the voluntary hospitals which were some of the biggest institutions in the country. Hospitalisation had to be paid for by taxation or by voluntary effort, and he thought it should be "a little bit of both." He urged the medical profession to get on with its own job—the investigation and treatment of disease and if possible its prevention—and he knew no greater damper to enthusiasm than bureaucratic control. Miss Maud Forrester-Brown, M.S., contended that the voluntary hospital had often not been able to cope with the expansion of industrial populations. She urged that industry should carry the cost of the health of its population. Dr. Elizabeth Casson stressed the need for an organised mental-health scheme. Mrs. Clara Cross, M.D., speaking as a mother and a doctor asked for instruction in mothercraft and fathercraft for older boys and girls. And finally Mrs. Forbes Fraser pointed out that none of these schemes could be brought to fruition without nurses. There must be a new system of training student nurses and some organisation for the assistant nurse.

Notes, Comments and Abstracts

HEALTH INSURANCE IN SOUTH AMERICA

FOR some years the South American states have been giving attention to social insurance, and important conferences were held at Santiago de Chile in 1936 and at Havana in 1939 which provided programmes as a basis for governmental action. Chile has been a pioneer and by its example has encouraged other countries. Its act of 1925 from the outset applied to the whole wage-earning population while other states adopted a policy of gradual extension.[1] The responsibility for the health of the workers is placed on the employers in large undertakings such as mines, forestry and plantations, who are obliged to provide first-aid, the services of one or more doctors, and some hospital accommodation, in that order, in proportion to the number of their workers. The Santiago-Havana programme emphasises the value of the preventive and curative services afforded by sickness insurance. The main purpose is "to make available to insured persons and their families the resources of modern medicine for the preservation of their health and for the detection and treatment of disease in its earliest stages." Chile took a further step forward in 1938 with the Preventive Medicine Act which institutes periodical examinations for the whole population. A complete English translation of the act with the decree which put it into operation has just been published in the legislative series of the International Labour Office. Its object is "to bring to light the existence and arrest in time the development of chronic diseases such as tuberculosis, syphilis, rheumatism, diseases of the heart and kidneys, and also occupational diseases, such as lead poisoning, anthrax, silicosis, ankylostomiasis." The administration of the act is entrusted to medical boards who supervise the periods of partial or total preventive rest which may be prescribed. A preventive rest day means a period equal to half the ordinary working day, and disciplinary measures may be taken by the boards for non-observance of medical directions either by the employer or the employee. Where partial preventive rest days would disorganise work they must be replaced by days of total preventive rest, and pay is made up by the provident funds. The place at which the rest-cure is to be taken may be prescribed for the patient. Medical examinations must be made at least once a year, and medical boards may visit the places of work for the purpose though the examination must be made in the employee's own time except when an agreement to the contrary is made with the employer. The examination comprises at least the following tests: (*a*) summary clinical examination (weight, height, general examination, pulse, blood-pressure, auscultation of the thorax); (*b*) radiological examination of the thorax; and (*c*) Kahn or Wassermann reaction. Each board must include a tuberculosis specialist. There is a right of appeal by employers or employed against the decision of the boards to a medical complaints board consisting of medical representatives appointed by the president, the employers and the employees organisations.

The social insurance scheme of Peru has a general resemblance to the Chilean but with a novel feature. With the contributions collected from the employers and the state since 1937 hospitals have been built. The first and largest with 750 beds and the most modern equipment was opened in Lima last December, and another was opened in Ica in February. The scheme includes the provision of 12 other hospitals, 40 polyclinics, 50 rural dispensaries and 10 travelling dispensaries. Only when hospitals are available to provide the benefit within an area are the employed persons called on to make their contributions. Recent developments in the South American states include the formation of the inter-American Committee to Forward Social Security which will work in collaboration with the International Labour Office.

THE ANTISEPTIC CYCLE

IN his Honyman Gillespie lecture on Aug. 28 Sir John Fraser gave an account of wound infection before the first antiseptic era and reviewed the researches of Pasteur

1. Stack, M. *Int. Lab. Rev.* July, 1941, p. 1.

and Lister. He demonstrated the various antiseptic materials used by Lister for compound infected fractures and quoted extracts from Lister's paper published in THE LANCET of 1867, describing the successful treatment of eleven cases of compound fracture, which might be said to mark the advent of the first antiseptic era. Sir John then traced the history of the opposition which arose. Critics of the Listerian principle declared that strong antiseptics were unnecessary and were prejudicial to the healing of the wound. He quoted from the writings of Spencer Wells and Lawson Tait, and summarised the contentions on which the aseptic school was eventually established. Ultimately a compromise was reached. Except in a few centres the employment of antiseptics was reduced to a minimum, sterilisation was achieved by heat and steam-pressure. The highest standard of cleanliness on the part of the surgeon and all his helpers was exacted, and chemical disinfectants were only used in situations where they were not prejudicial to material or tissues. It seemed unlikely that a second antiseptic era would arise, but in 1914 the war casualties reproduced conditions which resembled those of the pre-Listerian period, and there was a renewed interest in the problem of wound infection—in other words, the advent of the second antiseptic era.

Today we are face to face with the same problem. Accepting the premise that all accidental wounds are infected, Sir John insisted on the importance of carrying out bacteriological examination of all these wounds as soon as they came under treatment. He described and illustrated the common types of wound infection—the pyogenic, the clostridial and tetanus. He drew attention to the value of tissue resistance as it develops in sequence to infection, and insisted that wound treatment must be designed to stimulate natural processes. As a preliminary to treatment three considerations must be kept in mind—

1. The certainty that the wound is infected;

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Prophylactic serum should be used wherever a clostridial infection was suspected. The sulphonamides have proved of immense value from the prophylactic and therapeutic aspects, and have removed much of the risks attendant on accidental wounds. Of the depot antiseptics he favoured Albucid soluble (*p*-aminobenzenesulphonacetamide), and introduced 5–15 g. of this salt into all potentially infected wounds.

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Jan Slomka was born in serfdom in 1842 and lived all his life in the village of Dzikow on the borders of Austrian Poland. His life story, which he finished at the age of 87, personifies the struggles through which the peasants evolved to democracy (From Serfdom to Self-Government. Minerva Publishing Co. Pp. 274. 8*s*. 6*d*.). As a young man he was one of the few literate people in his district, and, being energetic and observant, he was able to apply new methods in agriculture which other peasants, more conservative and superstitious, refused to consider. He consequently prospered and for 40 years was mayor of his village. He describes the psychological difficulties the peasants had in adjusting to their freedom. During serfdom they had got used to regarding work on the land as an imposition. Since the land did not belong to them they pottered along from day to day. When serfdom ended this ingrained habit remained like a yoke and was not shaken off for twenty years. During this time they lived in extreme poverty, and being unable to see any prospect of improvement most of them turned to vodka for solace, rather than to better farming technique. Land was exchanged or taken on lease, the payment being made in grain or potatoes delivered in the spring. The peasant, unlike the more business-like rentier, was slow to appreciate the monetary value of land; the saying was: "Am I to live for ever that I should buy land outright?"

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Slomka's detailed observations on peasant life and customs are shrewd and human. He writes as a peasant, and the translator has skilfully preserved the rustic twist of his language. The book brings a breath of country air with it, reminding the town-dweller that agriculture is still the basis of life, and is a valuable, if informal, contribution to sociology.

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Births, Marriages and Deaths

BIRTHS

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FYFE.—On Sept. 18, at St. Andrews, the wife of Dr. G. Matthew Fyfe—a son.

POLLOCK.—At Market Harborough, the wife of Major C. B. R. Pollock, R.A.M.C.—a son.

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DEATHS

ATWILL.—In August, by enemy action, John Anthony Atwill, M.R.C.S., of Didcot, Berks.

BARNETT.—On Aug. 31, at Beaconsfield, Kennet Bruce Barnett, M.B. R.U.I., F.R.C.S.I., lieut.-colonel, R.A.M.C. (retd.), aged 74.

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JEFFERSON COUNTY AND
Medical Library
UNIVERSITY OF LOUISVILLE

ORIGINAL ARTICLES

INFLUENZA IN ENGLAND IN 1940–41

C. H. ANDREWES, M.D. LOND., F.R.C.P., F.R.S.

R. E. GLOVER, F.R.C.V.S.

N. P. HUDSON,* M.D. HARVARD

DORA LUSH, M.SC. MELB.

C. H. STUART-HARRIS, M.D. LOND., M.R.C.P. MAJOR R.A.M.C.

(National Institute for Medical Research, London, N.W.3, and a Military Laboratory)

ACCOUNTS of influenza in England in 1936–37 (Stuart-Harris, Andrewes and Smith 1938) and in 1939 (Stuart-Harris, Smith and Andrewes 1940) have described the clinical features of the outbreaks of those years and the experimental studies then carried out on ferrets and mice. In order to bring the story up to date and to help in ultimately viewing the epidemics of these times in perspective, the following account of experiences in 1940 and 1941 is published.

In 1940.—Circumstances, in particular the absence abroad of the clinical member of our team (C. H. S.-H.), did not permit us to make correlated clinical and pathological studies in the spring of 1940. It may be said, however, that the outbreak of respiratory disease then prevalent in southern England was of the long-drawn-out rather than sharply peaking form, that "clinically typical" influenza was relatively infrequent, and that a tracheo-bronchitis with slow recovery was very prevalent. Garglings from patients diagnosed as clinical influenza were tested by intranasal inoculation of ferrets as in earlier studies. The ferrets were observed for the development of fever or respiratory symptoms, and in many instances subsequently tested for immunity to influenza A virus (Horsfall et al. 1940). No evidence was obtained that that virus was prevalent at all in southern England in 1940. The garglings tested were of the following origins :—

Woolwich	2	tested in January,	1940.
Cambridge	3	,, ,, ,,	,,
Sherborne	3	,, ,, ,,	,,
London	3 (pooled)	,, ,, ,,	,,
Hampshire	1	,, ,, ,,	,,
London	1	,, ,, March	,,
,,	3	,, ,, April	,,
Feltham, Mlsex.	1	,, ,, May	,,
London	1	,, ,, September	,,
,,	3 (2 pooled)	,, ,, November	,,
Wiltshire	2	,, ,, December	,,

As already mentioned, none of these produced infection in ferrets.

In 1941.—In spite of the absence of any general epidemic in the winter of 1940–41, sporadic cases of clinical influenza occurred in London and elsewhere in southern England. We received during January and February garglings or serum samples from 19 patients diagnosed as clinical influenza ; all but 2 came from the London area. As will be shown, 8 of the specimens (42%) provided evidence that the disease was influenza A.

During the same period, a detailed clinical study of the acute respiratory infections occurring in patients admitted to a military hospital in southern England was being made by one of us (C. H. S.-H.). No actual epidemic was observed, but there was a sharply increased incidence of cases in January and February, and many cases presented the clinical picture of influenza as seen in 1937 and 1939. Pathological investigations on 30 cases carried out locally and on material transported to Hampstead showed that 79% of the cases investigated in January and February were examples of virus A influenza. As a number of cases of pneumonia and miscellaneous ailments were included, the actual incidence of virus A infection in cases of clinical influenza in the area was probably even higher. A number of cases of influenza with the signs of bronchiolitis as seen in 1937 (Stuart-Harris et al. 1938) were also seen, and each of the three cases investigated was found to have evidence of influenza virus A infection. It is necessary to emphasise that the military hospital cases were selected only in so far as fever was concerned. They therefore represented the average case of febrile acute respiratory infection during the period stated ; the investigations at the military hospital are described in more detail elsewhere (Stuart-Harris 1941).

The higher proportion of positive tests for influenza A virus infection in the group from the military hospital compared with those from London (79% : 42%) may be due to a real difference in the type of respiratory infection in the areas concerned. It may, however, be only apparent, for the material examined from the hospital consisted for the most part of serum samples to be tested for antibodies ; that from London comprised chiefly garglings for inoculation into ferrets. As we shall show, the ferret test has proved, more especially this year, to be a far less delicate index of infection than the other.

Specimens from 16 patients from various districts were examined during March and April, 1941 ; not one gave evidence that influenza A was concerned.

ATTEMPTS TO RECOVER VIRUS IN 1941

Tests on ferrets.—Garglings from 22 patients were inoculated into ferrets between January and early March, 1941. The majority of the ferrets developed fever and symptoms of respiratory infection. Since it was not possible to make serial passages with all material believed to contain virus, some febrile ferrets were allowed to recover, then bled and their antibodies studied. We confirmed earlier findings that no antibodies against the virus occurred in ferrets of our normal stock ; accordingly the development of potent neutralising antibodies against influenza A virus in 3 inoculated ferrets was accepted as proof of the presence of A virus in the 3 specimens of garglings used to infect them. In 15 other ferrets fever or symptoms of nasal infection or both appeared, and serial passages were made at intervals of 3 or 4 days ; 5 strains proved immunologically to be influenza A virus were thus established. In previous years a strain once adapted to the ferret has been tranamissible in series with great regularity ; in 1941 less regular results were obtained, occasional ferrets in a series failing to respond with typical fever and symptoms. Furthermore, 7 "strains" were obtained which were apparently capable of propagation for 2, 4, 5, 5, 6, 7 and 9 passages respectively, but eventually "petered out" and were lost. Tests on sera fron recovered ferrets in each of these series showed that no antibodies against influenza viruses A or B were present. The symptoms of upper respiratory tract infection and the fever were, however, typical of influenza in the ferret, though there were rather more "misses" than with the 5 strains which proved to be A. Cultures of turbinate suspensions were made as a routine ; some trouble was met with by the picking up of *Pasteurella bronchiseptica*, hæmolytic streptococci and other organisms in the course of ferret to ferret passage, but ferrets receiving culturally-positive material have been excluded from the account just given. On two occasions filtration through a gradocol membrane (average pore diameter 0·7μ) apparently permitted an active agent to pass.

During these investigations those of us doing the ferret tests (C. H. A. and R. E. G.) felt it likely that an agent, probably a virus, had been transmitted to and was being passed through ferrets ; but that it could not be securely established in those animals. No conclusive evidence of the correctness of this view was obtained. Suspensions of ferret turbinates containing the supposed agent were passed serially through Swiss mice ; with 3 strains passages were made through 5, 5 and 6 mice in series respectively ; no virus was recovered. Inoculations of chick embryos amniotically (Burnet 1940a) were equally unsuccessful ; filtrates of 6 strains of the series under discussion were used. The queer results obtained in 1941 contrast sharply with those of 1940, when all the material inoculated into ferrets gave unequivocally negative results.

Tests in chick embryos.—As has just been mentioned, Burnet (1940a and b) has lately succeeded in infecting chick embryos by the amniotic route with filtrates of human garglings. Infected embryos showed macroscopic changes in the lungs, or microscopic changes in smears of tracheal exudate ; further, many embryos died. After a few passages it was

* Member of the Health Commission to Europe, International Health Division of the Rockefeller Foundation.

possible to adapt the strains to mice. Such by-passing of the ferret would represent a definite improvement in technique, since ferrets are not easy to work with in the average laboratory. Experience with two of our strains, TAY and BER, obtained early in January, 1941, seemed to confirm Burnet's findings; the changes described by him in tracheal smears of inoculated embryos were seen in one instance in the first chick embryos injected, and material from these chicks infected mice. Unfortunately, the first successes were the only ones; no other virus was induced to infect eggs straight from human garglings, though 21 were tested, 8 of them being certainly from cases of influenza A. In almost every instance at least 3 serial passes were made through chick embryos before the material was abandoned as negative. The loss of virus was confirmed by the negative results of complement-fixation tests (4 strains) or of ferret inoculations (3 strains).

Infection of chick embryos was also attempted with strains which had previously been established in ferrets or mice. Ferret material of the BIR strain produced macroscopic changes in chick embryos at the third passage, and, after one further pass, infected mice; as will be seen later, we failed in two attempts with this strain to infect mice directly from ferret material. In other trials, made in the spring of 1941, filtrates of turbinate suspensions from 4 ferrets infected with the HER, WOR and WES strains of virus gave entirely negative results in chicks, though one (WOR) would infect the chick after previous adaptation to the mouse—a curious contrast to the findings with the BIR virus, which would go from ferret to chick but not directly from ferret to mouse.

Repetition of these attempts in June and July gave rather different results: ferret material of strains HER, WOR and WES was in each case successfully adapted to chicks after a few passes, and thence (HER and WES strains) to the mouse. The ferret material had been kept dried during most of the intervening time, and had only undergone one or two further passages in the ferret. It is probable that greater susceptibility of chick embryos in the summer accounted for the greater success; seasonal differences in the susceptibility of chick embryos have been recorded for ectromelia virus infection by Burnet and Lush (1936).

In positive embryos it was found, as also with well-established strains like PR8, that, at any rate in later passages, an almost constant feature was depletion of the amniotic fluid around the embryo, so that embryos appeared "tied up in knots," often with their feet behind their necks and the membranes closely pressed around them. This finding has been in our experience more constant than anything in lungs or tracheal smears; indeed the changes described by Burnet have been noted only in embryos with the above-described naked-eye appearances. Altogether, the chick-embryo studies have been disappointing; it remains to be seen whether the differences between our findings and Burnet's are due to differences between virus strains or between the eggs or some other, unsuspected, factor.

Work with mice.—In view of our failures in the past, we made no attempts to transmit a virus directly from man to mice. We tried to infect mice with the 5 strains established in ferrets. One (WOR) produced lesions after 4 passes through Swiss mice; this was found immunologically to be closely related to both the GAT and CHR strains of 1937 (Smith and Andrewes 1938). Three others failed to infect Swiss mice after 5 passages in series (MAR strain), 9 passages (WES strain), 5 and 9 passages in two separate trials (HER strain) and 7 passages (BIR strain). The WES and BIR strains were, however, later adapted to mice after being previously grown in chick embryos, as has already been described. It then appeared that the BIR strain was antigenically very like the TAL and CHR strains.

Two other strains (TAY and BER) infected mice after only one and two chick-embryo passages respectively; these were serologically related to our 1937 CHR and TAL viruses. Since 1935, when several viruses were readily induced to pass from the ferret to the mouse, we seem to have encountered progressively greater difficulty in infecting mice with influenza viruses. In 1937 we succeeded with 8 out of 10 strains, obtaining lesions by the 5th or 6th passage, often earlier. In 1939 the results were not very different, and we seemed to be getting over the difficulties in adaptation by using Swiss instead of our own "farm" mice. In 1941 we have failed to adapt a number of strains directly from ferret to mice even when we used Swiss mice.

SEROLOGICAL STUDIES ON HUMAN SERA

Tests against influenza A virus.—As in previous years we have compared the neutralising antibodies in "acute" and convalescent sera, and have taken a five-fold or greater rise in neutralising antibodies against influenza A virus during an illness as evidence of infection with that virus. Table I shows that of 34 pairs of sera from the military hospital taken in January and February the tests on 27 indicated that the patient had suffered from influenza A infection, 7 that the patient's infection was something else; 4 pairs of sera obtained in March and April disclosed no evidence that influenza A was concerned. Only small numbers of sera from other areas were examined (see table II).

TABLE I—RESULT OF TESTS ON MATERIAL FROM MILITARY HOSPITAL; JANUARY AND FEBRUARY, 1941

—	Virus A recovered in ferret test	No virus recovered in ferret test	No test in ferret
"A" infection indicated by serological test ..	1	2	24
Not an "A" infection by serological test ..	0	0	7

TABLE II—RESULT OF TESTS ON MATERIAL CHIEFLY FROM LONDON AND NEIGHBOURHOOD; JANUARY AND FEBRUARY, 1941

—	Virus A recovered in ferret test	No virus recovered in ferret test
"A" infection indicated by serological test ..	2	3*
Not an "A" infection by serological test ..	1*	1*
No serological test ..	5	7

* The serological diagnosis was here based on the antibody level in a "convalescent" bleeding only, no "acute" sample being available; the result is thus less dependable than when two specimens could be tested.

Tests against influenza B virus.—Since Francis (1940) described an influenza virus, named B, serologically unrelated to A, we have sought for evidence of its occurrence in England. None of the ferret inoculations carried out in 1941 yielded B virus. Of 8 sera from recovered ferrets, 3 were infected with A and 5 with something other than A; these were tested for antibodies against B virus; but none neutralised. Similarly 11 human sera from patients in Hampshire who failed to show a rise in antibodies against A virus in the course of their illness also gave no indication of infection with influenza B, though a low level of anti-B antibodies was present in all samples. There is thus no evidence that influenza B was prevalent in this country during 1941.

The presence of some antibodies against influenza B virus in human sera is possibly related to the existence of that infection in England in the past. Evidence will be published that some B was present in southern England in 1939.

DISCUSSION

Results shown in tables I and II confirm our previous experience that test of acute and convalescent sera for neutralising antibodies is a far more delicate index of infection than ferret inoculation; 5 patients whose garglings failed to yield virus yet seem to have been examples of influenza A as judged by the serological test. In spite of Burnet's promising findings, the amniotic method of chick inoculation has in our hands given even poorer results than has ferret inoculation.

In 1940 (Stuart-Harris, Smith and Andrewes) it was pointed out that a four-year cycle of major influenza epidemic peaks had been recently prevalent in England. Peaks in 1929, 1933 and 1937 had been interspersed with minor prevalences in 1931, 1935 and 1939 and almost nothing in the years adjacent to the peak years. If the cycle had continued, 1940 should have been a year free from influenza A—and so our laboratory studies indicated; but 1941 should have been a peak year, and this, fortunately, it did not prove, the deaths from influenzal pneumonia in London and the great towns having remained at a fairly low level.

One naturally wonders why no epidemic arrived, why the 1941 virus was so poorly adaptable to the ferret or from the ferret to the mouse, and why we could not reproduce Burnet's results in chick embryos; further,

whether these facts are related. The power of a parasite to produce disease—its virulence—is known to vary independently of its infectivity or power to spread from host to host. It seems, however, that the influenza A viruses prevalent in England in the spring of 1941 were poor things in all respects; their infectivity for man was low, virulence for man not very high and virulence for laboratory animals also low.

SUMMARY

No evidence of the presence of influenza A virus was obtained in material from the respiratory infections prevalent in England in the early months of 1940.

In January and February, 1941 no widespread influenza epidemic occurred in England, but laboratory studies indicated that a considerable proportion of the sporadic clinical influenza prevalent in those months was due to influenza A virus. The viruses recovered infected ferrets less easily than those of other years and were less readily adapted to infect mice. In contrast to Burnet's recently published findings (1940), we only succeeded in 2 instances out of 23 in infecting chick embryos by the amniotic route directly from material of human origin.

We wish to thank the medical men, both Service and civilian, who kindly provided us with material.

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EXTRA-ORAL SPLINTING OF THE EDENTULOUS MANDIBLE*

LEANDER POHL, M.D. VIENNA, L.D.S.

IN treating fractures of the edentulous lower jaw or cases where resection of the edentulous mandible has to be performed, difficulties may arise so that fixation cannot be achieved by the methods commonly used, such as intra-oral splinting, splints in combination with flanges, saddles, hooks, screws, clamps, nails, circumferential wiring, bandages and so on. Rhodes (1934), referring to fractures of the molar region when no teeth are present posterior to the fracture, writes: "It is difficult to see how any dental appliance can overcome such a difficulty as this, even if treatment can be taken in hand at once." Kelsey Fry (1939), in a lecture on first-aid treatment of fractures of the jaws, says: "I shall be surprised, however, if, by the end of the war, a satisfactory method has been found of replacing a displaced edentulous posterior fragment. . . ." Gillies (1935) doubts whether any surgical or dental control of the moderate displacement that occurs is either justifiable or possible in cases where the posterior fragment is short and edentulous. Warwick James (1940) goes so far as to accept malposition in certain cases of extreme difficulty.

One of the methods commonly used in the last war was to control the posterior fragment by vulcanite plates with flanges or saddles fitted to them. Round (1939) describes a method similar in principle. He fits a small bite block on a local cap of hard vulcanite fitting one or two upper teeth and carrying a cushion of soft vulcanite (Ash's soft rubber) to engage the lower fragment. When the bite block is in position he wires the upper and lower teeth together, thus assisting the posterior fragment to take up its normal position.

Nakamura (1937) has designed a device for splinting the edentulous posterior fragment by means of a metal screw vulcanised to a plate. The screw fits into a channel drilled in the edentulous fragment, or is fixed by a wire ligature through a hole drilled in it. He quotes a number of cases in which it was possible to leave the plate and screw in position from the date of resection until the final healing of the bone graft without complications.

* It was intended to read a paper on this subject at the Congress of Structive (Plastic) Surgery in London in 1937.

Bruhn and Lindemann (quoted by Wassmund (1927)) have treated a series of fractures by using the Codivilla-Steimann nail-traction. The posterior fragment is drilled with a burr, and two silver or aluminium wires connected by a plate are passed through. Schroeder's method (also quoted by Wassmund) is somewhat similar; he uses a metal plate which is fixed by means of a screw passing through a slit in it. Foramitti (1917) fixes the edentulous fragment with a nickel splint screwed direct to the bone.

Wassmund (1927) described cases which he treated by traction by means of an U-shaped wire passed through the bone and soft tissues. Collins (1937) reports on a similar method, advocated by Ivy and Curtis (1931). After an incision at the angle of the jaw, a wire is passed through the bone, and its end is brought out through the skin and twisted into a loop. The wire loop is attached to the wire in the head-piece, which is incorporated in a plaster bandage around the head. The two fragments are brought in perfect alignment after sufficient traction has been applied, and a firm union is achieved.

Darcissac (1933) and Lenormant and Darcissac (1927) point out that fracture of the edentulous mandible is perhaps the only condition in which interosseous wiring is justifiable. Their method is as follows (Darcissac 1933). An incision is made along the lower border of the jaw about 2 cm. long. The bone is drilled on each side of the site of the fracture with a burr 2–3 mm. from the lower border. A thick silver or bronze wire is passed through the hole and the ends twisted to form a loop by which traction can be made on the fragment. The external wound is then closed. The same procedure is done on the side opposite to the fracture so as to exert counter-extension on the larger fragment. Traction is made by elastic to the two handles of wire passing round the neck. Gillies (1935) advocates this method when the edentulous fragment is long and displaced and its control is of great importance. He recommends for such cases either drilling a hole in the angle of the jaw and passing a wire retractor band through it, vulcanite appliances, or gutter splints, which can be fixed by circumferential wiring in order to obtain good alignment of the fragment without causing necrosis of the medullary portion of the bone. Circumferential wiring is according to him particularly applicable to the depressed central fragment in an edentulous or partially edentulous case.

Berry (1941) describes a method of fixation for fractures of the edentulous mandible in which vitallium screws are inserted vertically into the bone fragments through the oral mucous membrane. The heads of the screws are then joined by a bar bent into appropriate shape. The apparatus may be applied outside the mouth if desired.

Rogers, Hall and Shackelford (1932) employ in certain cases open reduction intra-orally. An incision is made, the two ends of the jaw are exposed and two holes are drilled in the bone, through which silver wire is passed and twisted together.

The results of the various methods so far mentioned are not invariably satisfactory. The value of flanges or saddles in combination with vulcanite plates of fixed metal splints is according to my own and others' experience (Wassmund 1927, Steadmann 1939, Fell 1940) questionable, for they invariably carry the danger of necrosis owing to abrasion and ulceration of the tissues overlying the posterior fragment, and offer but small hope of success. My experience has been the same with wiring the fragment to a vulcanite plate. Methods of drilling holes in the bone and passing nails, screws or even wires through it as well, especially where a deliberate communication is made between the medullary portion of the bone and the oral cavity, are open to the grave risk of causing necrosis. Samuels (1934) reports a rare case of a fracture of an edentulous mandible where the patient died from embolism after holes had been drilled in the bone and wires passed through them. Conditions are sometimes most unfavourable for bone-grafting. Some of these methods are applicable only if enough teeth are standing in the larger fragment to provide anchorage for a plate. Surgical intervention may sometimes not be possible owing to lack of accommodation, time or skilled personnel if a great number of cases have to be dealt with, for instance at a first-aid post behind the front line.

The external splint suggested by Vaughan Tomey (1940) cannot be considered as a treatment splint but is a useful means of giving external support to a bandage and should prove useful in emergencies.

According to my experience with the elevation of a depressed malar bone, Bruhn's hook-extension, a

modification of nail-traction, seems to be far superior to other methods, for the hook being inserted only superficially into the bone, there are fewer cases of necrosis. The method which I am going to describe is based on the same principle, using hook-extension (hook-traction) but avoiding most of the disadvantages of other methods. Its principle is the extra-oral application of hook-screws into each fragment of the fractured mandible, and connecting them by a bar welded to them.

DETAILS OF METHOD

The hook-screw (fig. 1) is made of stainless steel in three sizes. It consists of three main parts: (1) a hook ending in a sharp point, the shaft of which is square in cross-section; (2) a simple screw tapered at one end and with a square head at the other; and (3) a connecting rod between the two. The connecting rod is threaded at one end for the screw, and has a square hole at the other for the hook, as well as a locking screw.

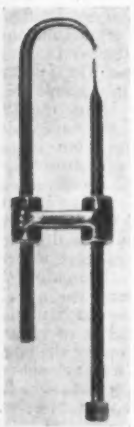

FIG. 1—The hook-screw.

Insertion of the hook-screw.—The site of insertion of the hook-screws depends on the type of fracture, the extent of external injuries present, and so on. It is applied best at the thickest part of the bone and as far from the line of fracture as is considered necessary. Before application the hook-screw is taken to pieces, and after the skin is surgically cleansed the hook is inserted so that injuries to vulnerable organs are avoided as far as possible. As soon as one can feel bone either slight pressure or traction is exerted. While the fragment is thus held in position with one hand by means of the hook the connecting rod together with the screw is slipped over the hook and then screwed tight. The screw is then screwed down, and advanced into the compact bone only, in order to avoid any injury to the bone-marrow. Three or four hook-screws should provide sufficient stability, but more may be used if necessary. There is no difficulty in inserting the hook-screws in the body of the mandible or the horizontal ramus, whereas care has to be taken if the ascending ramus is very short in order to avoid damage to the facial nerve or the parotid gland (see case-record).

The bar.—With the screws in position on both sides of the fracture a stainless steel bar 4 mm. thick is bent to shape according to the position of the hook-screws and the extent of external injuries present. The distance of the bar from the skin should be not less than an inch.

The welding process.—The hook-screws are then joined by means of the bar, which is welded to them in situ with the Rakos welder† (fig. 2) after alignment of the fragments. No special preparations are necessary except covering the skin with wet gauze for the heat during the welding process is only local. A cold-water spray is sufficient to cool the metal, so that no ill effects to the adjacent tissues need be feared if ordinary care is taken.

Welding has many advantages over soldering the bar on the screws previous to the insertion of the whole splint. First, one never knows the exact position of the hook-screw before it is inserted. Secondly, it may prove necessary to change one or the other hook before the fracture has united. By the use of welding this can be done without removing the whole splint, thus avoiding undue damage to the bone. Furthermore, any additional appliance can be welded to the bar—e.g., in cases where absolute fixation may become necessary. An additional bar is then welded to the main bar on one side, and fixed on the other to a head harness. Other auxiliary appliances, such as extra-oral joints, can be fitted in the same way without removing the splint.

FIG. 2—Rakos welder in use.

Nevertheless, although welding is in our experience preferable, the bar can be joined to the hook-screws by means of special screws, or even soldered.

CASE-RECORD

Exact anatomical studies had been made regarding the site and mode of insertion of the splint as well as experiments with materials and the welding process before the technique was applied to the following case.

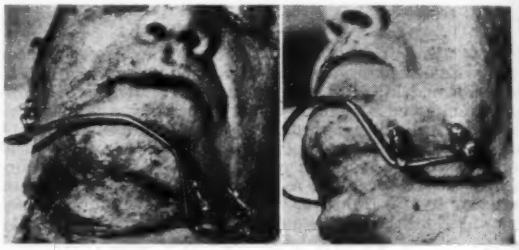

FIG. 3—Hook-screw splint in position, immediately after operation.

A man, aged 57, complained of pain and swelling in the right horizontal ramus of his mandible. His mouth was practically edentulous, for the lower canines, the only teeth present, were both very loose. A swelling could be seen extending from the right lower canine to the angle of the mandible, covered by normal mucosa. It was painless to palpation and showed the typical signs of a cyst. The radiogram seemed to confirm the diagnosis, but one very small hard indolent gland in the right submaxillary region caused suspicion of malignancy. After the cyst had been dissected out in the usual way microscopical examination of the cyst wall confirmed the suspicion of carcinoma.

Previous to the radical operation both canines were removed and dentures fitted. After a block dissection‡ of the affected glands and the soft submaxillary tissues involved, the diseased portion of the mandible was freed from its mucosa and

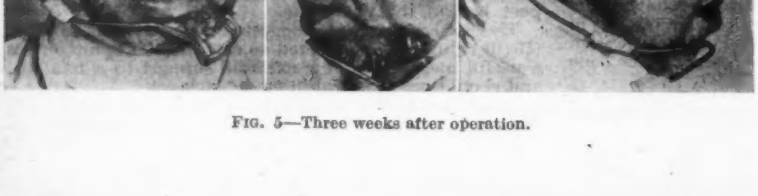

FIG. 5—Three weeks after operation.

† The Rakos process is a fusion welding. It is executed with a high-resistance welding torch, which is brought into direct contact with the pieces to be welded, thus preventing the development of a stationary arc. The temperature employed is about 3000° C. This heat is developed within a fraction of a second, and the welding completed before the heat can be conducted from the welding spot. Thus, in spite of the intense concentration of heat, there are no ill effects to tissues or materials in the immediate vicinity of the spot welded, even within the patient's mouth. The electric power used is of very low voltage, thus avoiding any danger of electric shock. The apparatus is now manufactured in England by Technotherm, Ltd., of 113, Victoria Street, St. Albans.

‡ The operation (resection of the mandible and bone grafting) was performed in collaboration with Dr. O. Hofer at the Policlinic in Vienna in June, 1937.

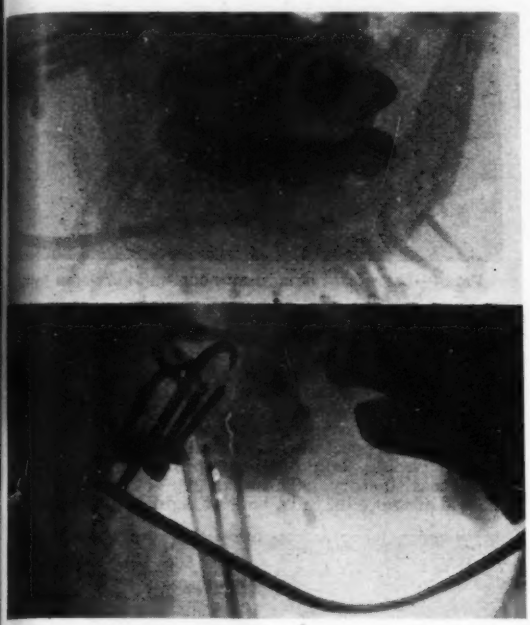

FIG. 4—Radiograms showing hook-screw splint in position. Above, anteroposterior view; below, lateral view of posterior fragment.

periosteum. The splint was then applied as described above before the bone was severed. Two of the hook-screws were inserted in the ascending ramus and two others before and behind the left mental foramen. Fig. 3 shows the patient immediately after the resection of his mandible with the hook-screw splint in situ. In fig. 4 the positions of the hook-screws are seen in radiograms. The posterior fragment was kept in position, and the patient was able to move his temporomandibular joints and chew gently shortly after the operation. The skin around the hook-screws was painted with Mastisol and covered with silver foil immediately after their insertion to reduce the danger of external infection. No signs of necrosis could be observed during the whole course of treatment, the only complication being a salivary fistula which developed at the site of one hook-screw on the ascending ramus. This unpleasant incident was, of course, anticipated, and is unavoidable with other methods as well if the posterior fragment is short. Fig. 5 shows the patient three weeks after the operation. The salivary fistula healed without any surgical intervention when the splint was removed after six weeks, leaving only slight scars at the site of the hook-screw. The posterior fragment remained in correct position until bone-grafting was performed.

DISCUSSION

The method described has been applied in this single case only, for circumstances did not allow me to make further investigations on this subject. But it proved so successful that I should like to see it more extensively used. It seems to offer an alternative way of treating cases where other methods are not satisfactory. It permits immediate reduction and fixation of the fragments without losing valuable time in the preparation of splints. The mouth, as well as all the parts of the face, are left free for any surgical treatment which may be necessary in a case of major injuries. Any alteration in construction required during the course of treatment is easily made without changing the splint or interrupting fixation. Proper feeding is facilitated from the first day after the splint has been inserted, and the patient is even enabled to masticate to a certain degree—both important advantages of this method. The mouth can be kept clean, and the muscles show much less atrophy because partial function is maintained. The simplicity of the technique allows its use by those without any special knowledge of dentistry. Its use should be limited to suitable cases. No doubt the posterior fragment is best left alone when displacement is only moderate and the fragment very short. But the method might prove useful in cases with much displacement as well as those with great loss of substance, especially of the body of the mandible, in order to avoid unsightly disfigurement and allows unrestricted movement of the temporomandibular joint.

SUMMARY

A method is described for the fixation of fractures of the edentulous mandible by means of steel hook-screws attached to each fragment and connected together by a bar welded to them in situ.

The technique is especially suitable for fractures in the region of the angle, or where there is great loss of substance in the body of the mandible. It permits immediate reduction and fixation without loss of time in preparing splints. The mouth and face are left free for necessary surgical treatment. Feeding is facilitated and the patient can chew to a certain extent as soon as the apparatus has been applied. The mouth can be kept clean and the muscles of the jaw can be exercised sufficiently to prevent atrophy.

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EXTERNAL PIN FIXATION FOR FRACTURES OF THE MANDIBLE

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FRACTURES of the mandible in the tooth-bearing area present a problem which can be efficiently solved by purely dental methods. The Curtis loop, the arch wire or the dental cap splint offer a good chance of an excellent result. When the patient has no teeth, or when the fracture occurs behind the tooth-bearing area, the problem is not so simple. In the region of the horizontal ramus Gunning splintage with circumferential mandibular wires is likely to succeed, but in fractures through or posterior to the angle the accepted methods of fixation have not proved universally satisfactory. These methods have included ingenious intraoral splints with extension apparatus intended to bear on and control the ascending ramus. Such methods depend for their success on the capacity of the mucous membrane to withstand pressure, and this capacity is limited to that part of the jaw which normally carries teeth. The alternative has been to fix the anterior fragment in correct relation to the upper jaw, and to apply traction to the angle of the mandible by means of a wire loop passed through the bone and then fixed either to a post-auricular support or by means of a bar to the cap splints on the anterior fragment. A wire at the angle, however attached, controls flexion at the temporo-mandibular joint but cannot and does not control the other two deformities —rotation and adduction.

We therefore considered that the method of crossed Kirschner wires, as introduced by Roger Anderson for

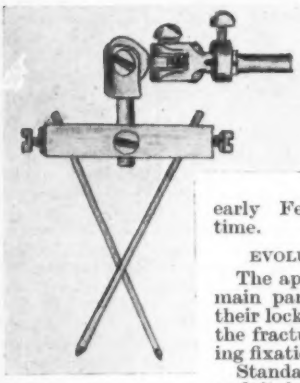

FIG. 1—Earliest type of plate and bar.

long bones, might enable us to apply direct skeletal fixation to the mandible. It may be of interest to follow the evolution of the method of applying these pins and of the type of intervening fixation from our first case in early February to the present time.

EVOLUTION OF APPARATUS

The apparatus consists of three main parts: a pair of pins and their locking plate on each side of the fracture line, and an intervening fixation bar.

Standard Kirschner wire is used, and it has been found that sizes smaller than 1·5 mm. in diameter are insufficiently stable, particularly under torsion. The wires, therefore, consist of 2 or 2½ in. lengths of 1·5 mm. Kirschner steel sharpened to a short bevelled pyramidal point. A pair of wires, crossing each other at an angle of about 60° before entering the bone, are introduced on each side of the fracture line and about ½ in. away from it. They are inserted close to the lower margin of the bone to avoid the inferior dental canal and they penetrate as far as the inner plate. It is now necessary to lock the outstanding ends of each pair together. The earliest type of plate used for this purpose is shown in fig. 1. It was found to be awkward in use, and a split type was then introduced. The screw employed to clamp the two halves of each plate together was at first also used to fix the connecting bar which ultimately unites the plates. This meant that each time an adjustment was made the plates had to be loosened on the pins and control of the bone fragments from outside was lost. In the next type (fig. 2*a*) the two halves of each plate were clamped together by two separate screws and a third screw was used to attach them to the connecting bar. This was too cumbersome, and fig. 2*b* shows a later type in which only a single thickness of metal is required.

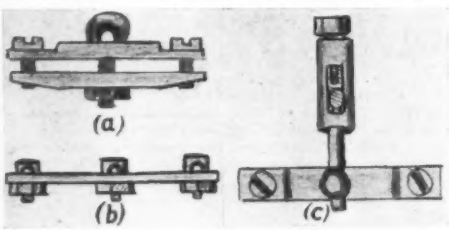

FIG. 2—*a* and *b*, stages in development of plate; *c*, universal joint at end of bar.

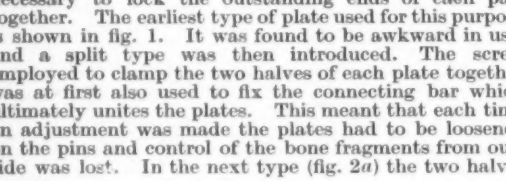

FIG. 3—Last stage but one in development of apparatus.

The next problem was to devise an intervening bar. This must be capable of lying slack and allowing movement in any direction so that the fracture can be easily reduced. When reduction is effected the bar must be capable of being locked rigidly in its final position. The first type of bar contained, in effect, two universal joints, one of which is shown in fig. 1. It worked well, but it was felt that if these joints were to be of reasonable size the chances of positive fixation were small. We therefore tried to use a single piece of ⅛ in. German silver wire, which was to be bent to the required shape on the operating table, but it was found that minor corrections were difficult to make, even with specially devised keys. The third type incorporated a universal joint at each end of the rigid bar (fig. 2*c*); but no miniature universal joint is really satisfactory. The next type of fixation (fig. 3) consisted of two ⅛ in. rods, bent at right angles and fitted into a short length of tubing. These rods were attached to the plates in such a way that universal movement was possible. At the same time positive locking was obtained by only four screws, one on each plate and two on the central tube. The whole apparatus is extremely simple and can be constructed by any mechanic, even without specialised tools. An even simpler type is now used, in which one of the screws on the tube has been eliminated. On one or two occasions pins have become slack between the second and third week, and the weight of the apparatus may have been partially responsible for this. We have therefore constructed the appliance in aluminium alloy and it now weighs considerably less than half an ounce. Its construction and use are shown in fig. 4.

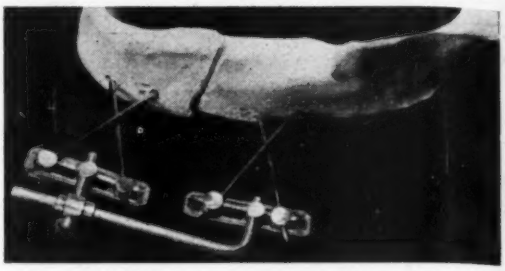

FIG. 4—Latest type of apparatus applied to skeleton jaw.

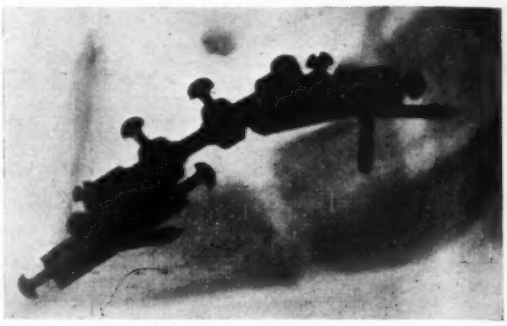

FIG. 5—Radiogram of early type of splint in use.

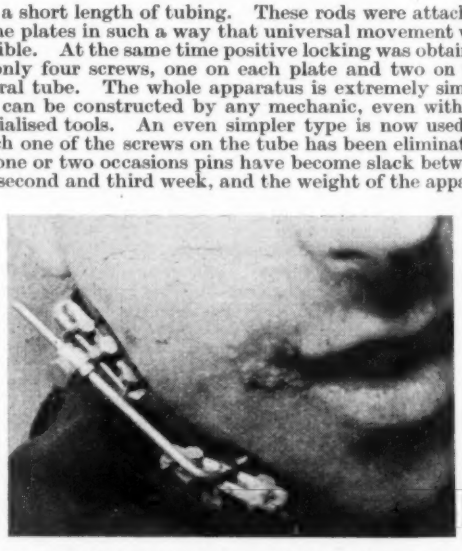

FIG. 6—Patient opening his mouth 18 hours after fixation of fracture.

It may be argued that the introduction of 1·5 mm. Kirschner wire through the skin of the face is an unwarranted barbarism. Against this must be offset three facts. First, hardly any discomfort is experienced by the patient. Secondly, fixation is so positive as to enable the surgeon to avoid locking the mandible to the upper jaw in many cases; the resultant maintenance of movement of the temporomandibular joint ensures that blood-supply remains at its optimum, the patient is enabled to eat in comfort and oral cleanliness is readily obtained. Thirdly, such scars as do occur seldom need treatment, but at the worst it is simple to carry out the necessary minor excision under a local anæsthetic.

The apparatus has now been used in 19 cases. We feel that the principle is worthy of further elaboration though it is probable that it will be applicable only to chosen cases and that it should not be used to replace the simpler and more standard methods for the great majority of fractures.

SUMMARY

By the use of an orthopædic principle it has been possible to elaborate an apparatus to control fractures of the mandible occurring behind the tooth-bearing area.

A pair of crossed Kirschner wires are inserted into each fragment. Various methods of locking each pair into a unit and then joining the units to maintain reduction are described.

The advantage is absolute fixation by extra-oral means. Oral cleanliness is readily obtained and function at the temporo-mandibular joint is maintained. Postoperative discomfort is negligible and feeding is simplified. The disadvantage is the occasional necessity to treat the small residual scars.

The method is in the early stages of its elaboration and its use should be limited to those fractures which cannot be adequately controlled by standard methods.

BLOOD CHANGES FOLLOWING CONTROLLED HÆMORRHAGE IN MAN

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RECENT experience of the treatment of air-raid casualties in the resuscitation wards has shown that most of the cases requiring intravenous infusions are suffering mainly from the effects of hæmorrhage. On admission of a patient to hospital it is often difficult to assess the amount of bleeding which has taken place. It is not until a day or two later, when the degree of maximum dilution can be measured and when blood corpuscles have not been transfused in treatment, that the extent of the hæmorrhage can be estimated. The clinical picture of such a patient may be complicated by wound infection or other conditions which reduce hæmoglobin percentage, but in the majority of cases reduction of hæmoglobin indicates hæmodilution following hæmorrhage. A simple method of measuring circulating blood-volume would be of great value, although there is still the objection that the original blood-volume is unknown. Such a method is not at present available.

The hæmoglobin percentage in a case of recent traumatic hæmorrhage gives no indication of the extent of the hæmorrhage, since dilution may not have occurred. The object of this work has been to investigate the course of dilution following controlled hæmorrhage. Hæmoglobin percentages, plasma proteins, blood-pressure and pulse changes have been followed, as well as blood-volume, plasma-chloride and blood-urea in a few cases.

METHODS

Volunteers were venesected and 28 observations were made. The subjects were convalescent hospital patients, and each one had a thorough clinical examination. All were found to have normal circulatory systems apart from three cases (Nos. 6, 7 and 9) who had hypertension. The clinical diagnoses of those with normal circulatory systems were neuroses (nine cases), chronic nervous diseases (eight cases), chronic bronchitis (two cases), convalescent lobar pneumonia (two cases), uncomplicated gastric ulcer, orthostatic albuminuria, undescended testicles and headache (each one case). Two subjects (Nos. 2 and 7) were found to have low initial hæmoglobin; both had been previously bled and regeneration of hæmoglobin was not complete. Nos. 7 and 9, and 13 and 24 are the same subjects venesected on different occasions.

Venesection was performed in the usual manner through a wide-bore needle, the subject resting on a couch with the trunk at an angle of 30°. Care was taken to keep the subject warm and at a constant temperature. An initial resting period was allowed for blood-pressure, pulse and hæmoglobin estimations to reach an equilibrium.

Hæmoglobin was estimated by taking 0·02 ml. blood samples from a freely flowing ear puncture and estimating the percentage by a photoelectric method (Hill and Pincock, to be published) accurate to 0·4% (standard error).

Plasma-proteins, plasma-chlorides and blood-urea were estimated by the methods of King, Haslewood and Delory (1937).

Blood-volumes were estimated in three subjects by a modified carbon-monoxide method. This was in principle similar to that described by Hartmann (1937), except for the use of red and infrared light instead of green and yellow light for measuring carboxyhæmoglobin.

RESULTS

The main data are shown in the table.

Blood-pressure.—Sixteen subjects showed a fall in blood-pressure, but in eight of these the pressure had returned to its previous level within an hour; three cases (Nos. 12, 26 and 28) showing this temporary reduction in blood-pressure developed a simultaneous bradycardia of 60 beats per minute or less; in eight subjects the fall in blood-pressure was prolonged up to as much as 24 hours, a group which included two hypertensive subjects.

The fall in pressure usually occurred with dramatic suddenness at the end of venesection, which was stopped at the first sign of a fall. Other symptoms appeared at the same time. The face became pale, the skin cold and clammy, and the respiratory rate frequently increased. Yawning was also a prominent feature. The patient complained of faintness, dizziness and nausea. There was frequently a desire to defæcate and urinate, and one subject actually passed urine. Unconsciousness often supervened, with depression of respiration, cyanosis, twitching of the limbs, rotation of the eyes, disappearance of the heart sounds and absence of pulsation in the large arteries. Bradycardia occurred with the first fall in blood-pressure and persisted. Loss of consciousness was usually brief, but case 6 was unconscious for five minutes. Case 28 had a fall of blood-pressure, bradycardia and syncope after the removal of 500 c.cm. blood; he was then allowed to recover, and half an hour later a further 600 c.cm. was withdrawn without a significant change in blood-pressure or a recurrence of other symptoms.

In nine subjects the effect of posture on systolic blood-pressure and pulse was investigated after venesection. All showed a striking and immediate fall in systolic blood-pressure on sitting sharply upright on the couch. The extent of this fall was in every case greater than 40 mm. Hg and always occurred within 10 seconds of sitting upright. If the sitting position was maintained, in most cases the systolic blood-pressure rose within 30 seconds to its previous resting level or to a figure slightly lower than that resting level, but in a few cases syncope terminated the observation. Fig. 1 illustrates this exaggerated response of systolic blood-pressure to alteration in posture compared with the normal response in the same individual after he had restored his original blood-volume. The heart-rate, which was followed by continuous electrocardiographic tracings, showed a tachycardia with an increase of more than 30 beats

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RESULTS OF CONTROLLED HÆMORRHAGE IN MAN

Subject	Age	Sex	Blood withdrawn (c.cm.)	Time of vs. (min.)	Blood-pressure (mm. Hg)			Pulse-rate (per min.)		Hæmoglobin (%)				Time of max. dilution (hr.)	Expected dilution	Plasma-proteins (g. per 100 c.cm.)				Blood-volume (litres)		Plasma-chlorides (mg. per 100 c.cm.)				Blood-urea (mg. per 100 c.cm.)		
					Initial	At end of vs.	Duration of fall	Initial	At end of vs.	Initial	Immediately after vs.	1 hr. after vs.	At max. dilution			Initial	Immediately after vs.	1 hr. after vs.	At time of max. dilution	Initial	At max. dilution	Initial	Immediately after vs.	1 hr. after vs.	At max. dilution	Initial	1 hr. after vs.	At max. dilution
1	40	M	1150	12	105/70	70/58PR +	20 hr.	82	60	73	68	68	53	19	56	8	8	..	8	..	..	..	..	..	..	36	36	..
2	44	M	1150	15	115/70	105/75PR +	..	76	100	50	49	49	40	24	38	6·4	..	..	7	..	..	..	..	..	..	40	..	43
3	50	M	1150	10	118/86	105/85PR +	..	54	94	107	101	101	86	23	82	7·6	7·6	..	7·2	..	..	..	..	..	..	28	..	32
4	49	F	1150	8	148/80	128/82PR +	20min.	80	92	72	70	70	57	72	55	7·1	..	..	6·8	..	..	..	..	..	..	28	..	17
5	68	F	1150	11	140/75	45/ ? PR +	8 hr.	72	56	96	88	87	74	23	75	8·2	..	7·9	7·8	..	..	..	..	..	..	36	36	38
6	53	M	1100	10	206/106	68/46PR +	24 hr.	64	42	95	90	89	66	24	77	..	..	..	..	..	..	..	..	..	..	49	52	55
7	42	M	1100	12	206/103	44/ ? PR +	24 hr.	80	94	63	60	61	52	24	50	6·8	..	6·4	..	..	..	456	..	455	..	72	72	113
8	40	M	1100	18	96/76	96/70	..	76	106	95	88	85	78	5	76	5·9	..	7	..	..	..	621	..	583	567	25	23	28
9	42	M	1100	12	194/120	172/118	6 hr.	92	116	70	68	66	56	26	56	7·4	7·2	..	6·8	..	..	417	420	..	421	46	88	65
10	16	M	1100	10	120/80	115/80PR +	..	76	84	92	90	89	74	48	71	..	..	..	..	..	..	..	..	..	..	38	38	38
11	45	M	1060	20	124/76	122/80	..	84	80	107	103	103	90	9·5	85	7·1	7	..	6·3	..	..	624	624	..	624	31	31	36
12	45	M	1050	18	120/90	40/ ?	20min.	58	40	109	106	105	87	48	86	6·9	..	..	6·9	..	..	..	..	..	..	40	..	40
13	19	M	1000	21	125/80	110/68	10min.	68	72	97	98	94	89	96	78	6·2	..	..	6·2	..	..	610	..	..	611	34	34	..
14	39	M	900	20	120/70	100/66PR +	1 hr.	70	86	77	74	77	68	24	63	6·2	6·4	..	6·5	..	..	597	601	..	630	34	34	40
15	40	M	800	11	122/86	100/86	24 hr.	78	118	100	100	99	88	21	84	..	6·1	..	6·2	..	..	640	642	..	660	22	22	27
16	48	M	800	10	110/80	110/85	..	84	86	89	86	86	71	19	74	7·8	7·8	..	7·8	..	..	..	..	..	..	38	38	38
17	69	M	800	15	130/80	135/85	..	88	90	95	94	94	87	92	80	..	..	..	..	..	..	..	..	..	..	..	..	..
18	60	M	800	15	114/74	98/70	1 hr.	72	76	95	95	95	84	22	80	6·6	..	6·5	6·5	..	..	..	..	..	..	..	..	..
19	42	M	750	24	86/65	85/65	..	60	64	105	100	95	83	4	85	6·7	6·6	..	6·9	4	4·2	..	..	..	..	..	..	..
20	53	M	720	6	114/64	104/68	..	68	72	95	..	94	80	23	83	..	..	..	..	..	..	..	..	..	..	..	..	..
21	45	M	720	15	108/62	95/50	..	68	74	84	77	75	62	19	73	7·8	7·2	..	6·8	5·3	6·6	..	..	..	..	..	..	..
22	54	M	720	22	116/84	90/72	1 hr.	80	96	120	..	111	92	48	103	6·5	..	..	6·6	4·5	5·2	..	..	..	..	..	..	..
23	33	F	700	12	138/74	130/65	..	..	..	77	77	74	61	90	62	7·3	7·1	7·1	6·9	..	..	..	..	..	..	..	..	..
24	19	M	700	13	102/62	80/58	20 hr.	68	69	90	88	87	77	24	77	7·1	..	..	7·1	..	..	560	..	..	560	30	30	32
25	44	M	650	18	108/78	102/76	..	72	76	74	73	71	69	3	64	6·5	..	6·5	..	..	..	..	..	..	..	34	34	35
26	30	M	550	10	114/90	78/68	20min.	60	48	89	83	87	83	..	80	8	8	..	..	..	..	621	647	..	..	32	32	..
27	40	M	465	10	128/90	92/72	24 hr.	80	82	95	92	95	87	4	85	7·1	7·1	..	6·7	..	..	607	594	..	594	..	..	..
28	47	M	500	5	120/72	60/50	20min.	72	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
			600	10	110/ ?	98/ ?	..	72	72	105	100	100	84	48	82	7·3	..	..	7·1	..	..	..	..	..	..	46	..	46

PR + = Exaggerated response of blood-pressure to postural changes. Vs. = venesection. Max. = maximum.

per minute, except in two cases where a bradycardia developed. On lying back there was in every case a rapid return of the blood-pressure and heart-rate to normal. The nine subjects who showed this response are indicated in the table by PR +. This exaggerated response to posture could be repeated at will, and some subjects still showed the response 5 or 6 hours after venesection.

Pulse-rate.—Six subjects (Nos. 1, 5, 6, 12, 26, 28) showed bradycardia, always associated with a fall of blood-pressure; another five (Nos. 2, 3, 8, 9, 15) showed tachycardia with a rise of heart-rate of more than 20 beats a minute; the remainder had little or no change in heart-rate.

Hæmoglobin percentage and blood-volume.—Initial dilution as judged by the hæmoglobin values was small. Eight subjects (Nos. 1, 3, 5, 6, 8, 19, 26, 28) showed a fall of Hb. of 5% or more and the rest less than 5%. The majority of the cases showed a maximum dilution which corresponded closely with the theoretical dilution calculated on the assumption that the blood-volume was five litres. Three subjects (Nos. 6, 21, 22), however, showed a maximum dilution which was considerably greater than the calculated figure, and in two of these subjects actual blood-volume estimations confirmed that there had been an overdilution and that the blood-volume had increased over the initial value. In cases 19, 21 and 22 the theoretical dilution is calculated from the observed blood-volume. Case 13 seemed to show failure to dilute to the theoretical figure, though followed for a considerable period. A week later the same subject (24) was again venesected, and on this occasion showed a normal dilution. The time taken to reach a maximum dilution showed great variation, from 3 to 90 hours; no reason has yet been observed why some subjects take a long and others a short time to reach maximum dilution.

Plasma-protein, plasma-chloride and blood-urea.—There was but little change in plasma-proteins while dilution was taking place. Cases 9 and 21 showed a fall, case 21 being one of those with over-dilution, while case 8, who had a rapid dilution, showed a rise in plasma-proteins. There was no significant change in plasma-chlorides after venesection. Blood-urea changes were also negligible except in cases 6, 7 and 9, who had hypertension with some renal involvement. The duration of the azotæmia in case 9 is illustrated in fig. 2.

DISCUSSION

The mechanism of dilution and regeneration of plasma-proteins and hæmoglobin after experimental hæmorrhage in animals has been reviewed by Whipple (1938). In man, Stead (1940) removed 760–1220 c.cm. of blood from six subjects. Five showed a sudden fall of blood-pressure and bradycardia. There was an immediate small dilution with protein-poor fluid, and dilution continued up to 72 hours without further changes in plasma-proteins. Our results show that the rate of dilution varies greatly in different subjects, and that therefore the hæmoglobin percentage estimated at an arbitrary time after hæmorrhage from an injury may give no indication of the extent of the hæmorrhage. The rate of dilution may also vary in the same subject, as illustrated by cases 13 and 24, the same subject being venesected on two separate occasions at an interval of 5 weeks. There was no obvious change in conditions between the two observations, and regeneration of blood had taken place.

The dilution of hæmoglobin is not paralleled by a dilution in plasma-proteins. In only one subject, case 21, was the small initial dilution associated with the passage of a protein-poor fluid from the tissues into the blood. Further fall of hæmoglobin continued without dilution of plasma-proteins, suggesting that there are available proteins in the tissues which pass into the blood-stream and maintain its colloidal content. The mechanism of this mobilisation of proteins is unknown, although there is evidence that the liver is an important source (Whipple 1938) and the cells of the reticulo-endothelial system may play a part (Cutting and Cutter 1935). Over-dilution may occur occasionally, a phenomenon that might be of clinical importance when considering the transfusion of patients with low hæmoglobin levels after hæmorrhage, and indicating the advantage of actual blood-volume estimations in such states.

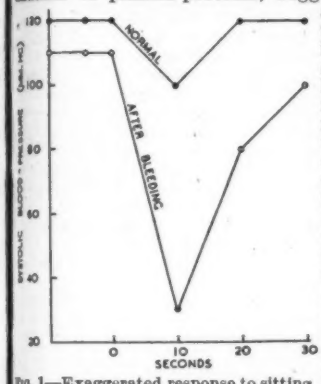

FIG. 1—Exaggerated response to sitting up after bleeding.

The fall of blood-pressure in certain subjects has a practical application to "shocked" casualties and the bleeding of donors. Emotional causes seem unlikely in our subjects, since the fall occurred only at the end of a large venesection, and a sudden drop of blood-volume appears to be the initiating mechanism. The prolonged fall in a few cases is in accord with well-known clinical observations after hæmorrhage. The exaggerated postural response may be part of the same mechanism, for it is known to happen in other conditions in which there is reduced venous return, such as long standing in the erect posture (Turner 1927) and untreated Addison's disease (Berry, Horton and MacLean 1940). Although an exaggerated postural response can occur in conditions in which there is no reduction of blood-volume, yet its presence in casualties suffering from hæmorrhage may be one further indication that a diminished blood-volume is present. Thus the postural response may be of value clinically to demonstrate reduction of blood-volume after suspected hæmorrhage. The pulse-rate seems to be of little value after hæmorrhage, since it may be slow, fast or show no change, an observation that agrees with the findings in air-raid casualties that have bled extensively (unpublished data).

The insignificant alteration in plasma-chloride confirms the observations made by Black (1940) after experimental hæmorrhage in dogs. The same worker observed a slight rise in blood-urea, but this is not confirmed except in those cases in which there is pre-existing renal damage.

Mr. D. K. Hill was responsible for the blood-volume estimations, and coöperated in the study of some of the cases in this series. Biochemical estimations were made in the school laboratories (director, Dr. E. J. King).

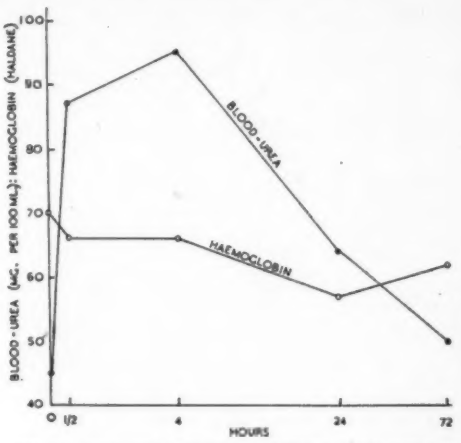

FIG. 2—Azotæmia following bleeding in subject 9 with malignant hypertension. Venesection of 1100 c.cm. was carried out at zero time.

SUMMARY

Twenty-seven convalescent patients with normal circulatory systems were bled up to 1150 c.cm. and blood-pressure, pulse-rate, hæmoglobin percentage, plasma-protein, plasma-chloride, blood-urea, and, in a few subjects, blood-volume were followed.

Sixteen showed a fall of blood-pressure with syncope; six of these had bradycardia. In half, the fall of blood-pressure was temporary; in the rest it was prolonged up to 24 hours. The response to posture (fall of blood-pressure on sitting up) was exaggerated in all of nine subjects investigated.

The heart-rate may be slowed, increased or unchanged after hæmorrhage.

The time taken to reach maximum hæmoglobin dilution varied greatly, from 3 to 90 hours average (32 hours). Three subjects showed overdilution.

Plasma-protein concentration showed little or no change while dilution was taking place. Plasma-chloride showed no change, nor did the blood-urea except in cases with known renal impairment.

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PHARMACY IN EXILE.—The college of the Pharmaceutical Society continues to sojourn happily in Cardiff, while the pharmacological laboratories and the department of nutrition have found a billet with the National Institute for Research in Dairying at Reading. As Mr. H. Berry, dean of the college, in the annual report for 1940, points out, reduction in teaching staff has decreased the amount of research work, but even so the report contains much that is of interest to the medical researcher in war-time. The influence of cooking on the vitamin-content of food, the components of acriflavine and the chemistry of the vitamin-B complex are some of the subjects which have engaged the attention of the college staff. The department of pharmacology records a rapid and convenient method for the assay of heparin, and observations on the property of a transparent artificial resin, perspex, to delay the clotting of blood, suggest that this substance may replace the paraffin-lined test-tubes and paraffin-lined glass cannulæ used in animal experiments.

TRICHINIASIS IN SOUTH-EAST LONDON

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THE present outbreak was traced to one particular supply of sausages, and the incubation period in most cases was known exactly. We had exceptional opportunities for investigating a compact group at risk, whether persons showed symptoms or not. Our cases came from (*a*) the staff of a local fire station, (*b*) neighbours supplied with sausages about the same day and by the same butcher as the station, and (*c*) one patient from this area who bought sausages elsewhere in the district. Colonel Cecil Maddock of the Ministry of Health investigated the public-health aspects of the outbreak and found that all these sausages came from one pork supply. The two severest cases included here are being fully reported by Houston and Ross (1941).

SUMMARY OF OUTBREAK

	Fire-staff	Others
Number known at risk to trichiniasis ..	30 ..	12
(*a*) Full picture of disease—i.e., puffy eyelids, face, or lips; well-marked eosinophilia; and most, or all, of the following: coryza, cough, headaches, gross sweating, malaise, aches and stiffness in neck and limbs, gastro-intestinal disturbances	6 ..	7
(*b*) Features as in (*a*) but no eosinophilia.	1 ..	1
(*c*) Features as in (*a*) but no puffiness and no well-marked eosinophilia	6 ..	1
(*d*) Gastro-intestinal disturbances only ..	2 ..	1
(*e*) Malaise, aches and cough only ..	1 ..	0
(*f*) Entirely symptom-free	14 ..	2
(*g*) Died	0 ..	1

Firemen.—Two firemen were admitted to St. Alfege's Hospital and found to have trichiniasis. We then investigated the station staff. Each member was questioned, examined clinically if indicated, and a blood-count done in each case. Those away sick were traced and investigated. The evidence showed that the peccant sausages were eaten at breakfast on May 20, 1941. The staff is divided into teams A, B and C. Thirty members of A and B ate these sausages and noticed that many were underdone. The twelve members of team C were off-duty, did not eat that meal, and were entirely symptom-free. Only members of teams A and B developed trichiniasis. (We were not aware of this team system until all the personnel had been assessed clinically.)

The full picture of trichiniasis was seen in six firemen, and one other showed all features except eosinophilia. Of these seven, two were ambulant and miserable, two were ill at home, and three in hospital. (One of the last three was traced to the Park Hospital, where he had been sent for typhoid fever, but where trichiniasis had already been diagnosed. He was included by courtesy of Dr. H. S. Banks.) Six others showed many features of trichiniasis but no puffy eyes and no definite eosinophilia. In two of these the eosinophil total was 540 and 600 per c.mm. Other findings are given in the table.

Neighbours.—In family A. B. three brothers developed the full disease, one required hospital treatment, one took to bed at home, and one was ambulant. The eldest brother disliked sausages and could not be induced to eat them. But on May 21, 1941, his mother cooked toad-in-the-hole. He wanted the batter but only got some on condition that he ate sausage, which he did. The sausage was underdone. He had symptoms 7 days later. Mother and daughter unselfishly allowed the brothers to consume the whole dish and were symptom-free.

In family C. D a girl of 13 had the full disease. Also at risk were her father, who remained well, and her sister who had gastro-intestinal symptoms only at the same time as her sibling.

Mrs. E. F. developed trichiniasis and died. Trichinella larvæ were found in her blood and Professor Leiper demonstrated a larva in her diaphragm at necropsy performed by Dr. Arthur Davies. Also at risk were her son who showed all features except eosinophilia, her daughter who remained well, and a lodger who developed clinical trichiniasis, puffiness excepted (eosinophil total 500; subungual hæmorrhages present).

Mrs. G. H. had eaten raw sausages from childhood, but since the war began she always "half-cooked" them. She had the full disease. No other member of the family ate sausages.

Mrs. I. J. acquired trichiniasis. Prof. R. T. Leiper saw her at St. Alfege's Hospital and obtained from her the history that she ate the bits of sausage which extruded from the ends during preparation for cooking. Only fully cooked sausages were given to others of her family, none of whom developed symptoms. Discussions with local doctors suggested that there were but few more clinical cases.

DISCUSSION AND ANALYSIS

Dickman (1938) found that nearly 10% of all pork sausages obtained at random in stores in different parts of the city of Philadelphia contained trichinella larvæ. Gould (1940), in a series of 500 unselected consecutive autopsies in Detroit, found 93 cases of infestation with trichinellæ. Young (1941), in 47 autopsies from Wolverhampton and Birmingham areas, found trichinellæ in 6, although Van Someren (1937) in 200 London autopsies found them only in 2. The latter summarised the previous records of trichiniasis in Great Britain.

What features justify a clinical diagnosis of trichiniasis? Kaufman (1940), in his full review, noted the irregular manifestations of the disease, and Hall (1937) considered that there was no adequate clinical picture available. Both puffiness of the eyelids and face and eosinophilia can be absent and the diagnosis yet be certain (Spink and Augustine, 1935, Kaufman 1940). In the present outbreak some patients showed neither puffiness nor eosinophilia but otherwise had the same features at the same time as their fellows with classical trichiniasis. Cases with epigastric pain as the only symptom are known (Conner 1929) but in the sporadic cases reported eosinophilia was well-marked. In outbreaks like the present how should cases with gastro-intestinal disturbances only and no eosinophilia be regarded? Hall (1937) stated that atypical trichiniasis probably makes up the large bulk of cases.

Puffy eyelids.—Two patients sought treatment because they looked Chinese. Swelling of the eyelids was noted by Sheldon (1941) in every case seen, but by Spink and Augustine in only 17 of 35 cases, and by Kaufman in 19 of 27 cases. Our experience is shown in the table. Two patients with puffy eyelids also had œdema of the ankles.

Eosinophilia.—In this outbreak there was a very high correlation between eosinophilia and puffiness of the eyelids or face. The eosinophils ranged from 16 to 61% and from 1600 to 18,000 per c.mm. The eosinophils were persistently high several weeks after symptoms began; 6 out of 7 firemen who originally had eosinophilia were examined 10 weeks after the acute infection. An eosinophilia was still present, ranging from 10 to 47% or 800 to 7800 eosinophils per c.mm. One patient had only 2% eosinophils on the sixth day of symptoms, but two days later they had risen to 30% of 32,000 white cells per c.mm. Two patients had full clinical features and puffy eyelids without eosinophilia; a total of three counts was done on them; there was a substantial leucocytosis each time but the eosinophils did not exceed 1% or 150 per c.mm. With the exception of three patients, who had symptoms and eosinophil-counts of 540, 600 and 500 per c.mm., and who have been mentioned in the text, there was no tendency to a "mild" eosinophilia—either the eosinophilia was gross, as in 6 out of the 7 fireman with puffy eyelids, or absent, as in the 7th case with puffy eyelids and the 6 other firemen with the complete picture except for puffy eyelids. Blood-counts were also carried out on 15 out of 16 people "at risk" who never showed symptoms. Three of them had eosinophil-counts between 400 and 450 per c.mm., which may perhaps be regarded as slightly above the usual normal; the remainder had very low eosinophil-counts. Of the third team, who were not at risk, the highest eosinophil-count among 12 firemen was 325 per c.mm.

Course of disease.—The incubation period varied from 5 to 16 days, and in the majority was under 11 days. Symptoms usually lasted less than a fortnight, but several patients were ill for a month and then felt weak. Of the 8 fireman who were most seriously affected, 6 were

off duty for 9 weeks or more, and 1 was discharged from the fire-service as unfit. An obese woman of 69 died, but a fireman of 19, apparently equally ill, recovered. Patients while in hospital were febrile for up to 10 days with a peak of about 102° F. During this period the pulse-rate averaged 90–95 per min.

Rashes, petechiæ, nails.—Urticaria occurred in 2, an erythema in 1, and papules in 1 other. Petechiæ of the forearms were noted in the 2 most ill patients, and on the inner cheek, palate, or floor of the mouth in 3 cases. The characteristic subungual "splinter" hæmorrhages (McNaught 1939) were present in 6 patients. In the fatal case they were also present under the toenails.

Gastro-intestinal and respiratory symptoms were prominent in our cases, but they nearly always appeared at the same time as the other features. Constipation was twice as common as diarrhœa. Coryza and cough were present in three-quarters of the cases, often ushering in the disease. Minot and Rackemann (1915) laid stress on the frequency of cough.

Mental and neurological symptoms.—Two patients had features suggesting encephalitis, and one of these died (see Houston and Ross). A third patient thought he "was going mad." A fourth had "never been so drowsy," and a fifth showed one extensor plantar response throughout his illness.

Skin tests.—Dr. P. B. Beeson and his colleagues did trichinella skin tests (see McCoy et al 1933) on those involved, and are continuing their studies.

Other features.—Hypotension was noted by Spink and Augustine (1935) and others. In our series, blood-pressure was normal. The blood-sedimentation rate has rarely been done, and when done has not been much raised (Kaufman 1940). We were unaware of this until our patients were improving, but on 3 inpatients tested on the 21st, 16th and 23rd day of symptoms, the rate was 21, 18 and 11 mm. per hour (100 mm. tube), the maximal normal value being 8 mm. per hour. Anæmia was absent even in very ill patients. Treatment (see Van Someren 1939) was symptomatic only.

SUMMARY

An outbreak of trichiniasis occurred among the members of a fire-station and a group of neighbours. All cases were traced to a single supply of sausages.

Of 42 persons at risk 26 developed the disease but only 13 showed the full clinical picture. There was 1 death.

We are grateful to Dr. B. A. Young, medical superintendent of St. Alfege's Hospital, L.C.C., Dr. F. L. Keith, medical officer of health for Deptford, Prof. R. T. Leiper, and District Officer A. L. Greenhead and Station Officer T. P. Murphy of the London Fire Brigade for their coöperation, and to Mr. D. H. Jones and Miss B. L. Thurland who carried out many of the blood-counts.

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TRICHINIASIS WITH CEREBRAL SYMPTOMS

REPORT ON TWO CASES

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IN the course of an outbreak of trichiniasis, described by Davis and Allott,[1] the two most severe cases came under our care. Each showed special features.

CASE 1

Fireman, aged 19, admitted to St. Alfege's Hospital on June 6, 1941. Illness started on May 30 with vague malaise and anorexia. On June 1 slight puffiness of the lips and cheeks was noticed and lasted for about 48 hours. Then complained of abdominal pain and diarrhœa which persisted until June 5, when became drowsy and incontinent of urine and fæces. At no time did he complain of any muscular pain or tenderness.

Temperature 101° F., pulse-rate 90 and respiration 22. Semi-comatose; could be roused with difficulty but fell asleep again almost at once. No neck rigidity and Kernig's sign negative. Fundi normal. Left arm spastic; knee- and ankle-jerks brisk; bilateral ankle-clonus with extensor plantar responses. Abdominal reflexes all present and equal. Spleen palpable about one finger's breadth below costal margin. No abnormality detected in heart or lungs. On the front of chest and abdomen there were numerous small erythematous areas, and a few tiny purpuric spots were seen on forearms, trunk and soft palate. Under fingernails, particularly on right hand, were rows of small hæmorrhages parallel to free border of nail and just proximal to it.

The patient remained very drowsy and incontinent until June 13, when he began to improve, and by June 21 his mental state was quite normal. Full sphincter control was regained a few days later. The spasticity of the left arm had disappeared by June 15 but on July 5 he had still slight spastic weakness of both legs with extensor plantar responses. The spleen remained palpable until June 30. During the first 8 days in hospital there was a remittent pyrexia up to 100° F. which fell to normal on the 3rd, 6th and 8th evenings. Since then the temperature has been normal.

Investigations.—On admission: red cells 5,100,000 per c.mm.; Hb. 102%; white cells 26,000 per c.mm.; polymorphs 11,440 (44%); eosinophils 10,660 (41%); lymphocytes 3640 (14%). Subsequent white counts:

Date	Total white cells per c.mm.	Eosinophils per c.mm.
June 10 ..	18,000	9540 (53%)
„ 12 ..	16,000	8000 (50%)
„ 18 ..	13,000	2860 (22%)

Blood-culture was sterile, blood Wassermann and Kahn tests and Widal test negative. Blood-sedimentation rate: 21 mm. in one hour (June 21).

C.S.F. normal in all respects. Antigen skin test strongly positive.

CASE 2

Woman of 69, admitted June 16. Illness started on June 6 with tiredness. Next day puffiness of lower eyelids and face was noticed with stiffness on getting out of bed. Later that day became drowsy. June 9: puffiness had disappeared and there was retching after meals. June 10: general condition improved somewhat. June 11: ached all over and moaned all day; that evening she collapsed but did not lose consciousness. For next 96 hours remained drowsy and was at times irrational. On the 13th became incontinent of urine and lost use of both arms; remained thus until admission. No coryza, no cough, no diarrhœa and no constipation.

On admission was grossly obese and very drowsy. Could be roused and responded to simple questions and requests: could state her age and where she lived and could protrude her tongue. Frequently emitted high-pitched cry. Incontinent of urine and fæces. Significant findings: loss of tone in facial muscles; flaccid arms with no voluntary movement or power; biceps jerks present on both sides but supinator and triceps jerks absent; both legs flaccid, particularly right; knee- and ankle-jerks present; bilateral extensor plantar responses; no papilloedema. Systolic murmur heard over whole precordium. B.P. 130/75 mm. Hg. Few petechiæ on volar aspects of both elbows, and sub-ungual "splinter" hæmorrhages very prominent on all ten fingers and on second and third toes of left foot. One big petechia under right big toenail. Bilateral rhonchi and râles. Temperature 98·4° F., pulse-rate 90; respirations 15.

On June 17 temperature rose to 102·4° F., pulse-rate to 130 and respirations to 35. Next day, coma was deeper and the temperature rose to 107° F., pulse-rate 150; Cheyne-Stokes respirations 45 per min. Deepening cyanosis. Following a tepid sponge temperature fell to 102° F.; died half an hour later.

Investigations.—Red cells 5,400,000 per c.mm.; Hb. 102%; white cells 12,000 per c.mm.; polymorphs 7560 per c.mm. (63%); eosinophils 3480 per c.mm. (29%). Whole blood: trichinella embryos detected in large numbers (Dr. Allott). Wassermann and Kahn reactions negative. C.S.F. normal in all respects; no trichinellæ seen.

1. Davis, E. and Allott, E. N. *Lancet*, 1941, **2**.

Antigen skin test: strongly positive.

Autopsy performed by Dr. Arthur Davies showed the following positive findings. Lungs: Subpleural petechial hæmorrhages, with zones of hæmorrhage in substance of left lung; basal congestion and œdema. Heart and liver: extreme fatty degeneration.

Stomach and uterus: few petechial hæmorrhages.

Right psoas muscle: extensive hæmorrhage into substance (similar findings in a case of fatal trichiniasis were described by Frothingham in 1906).

Prof. R. T. Leiper demonstrated microscopically the presence of a trichinella larva in the tendinous portion of the diaphragm.

Histological examination (Dr. A. B. Bratton). Microscopical examination shows presence of larvæ in voluntary muscle; numerous in tongue, scanty in diaphragm and right psoas muscle; in these sites also foci of inflammatory infiltration shown by serial sections to indicate proximity of a larva in many cases but not in all; such foci present in laryngeal muscles and an intercostal muscle, though sections include no larvæ. Myocardium shows subacute inflammation, mainly focal; serial sections do not show larvæ, even in vicinity of inflammatory foci. Excess of eosinophil leucocytes in sternal marrow. Sections of lung, liver, spleen, kidney, suprarenal, pancreas, gall-bladder, duodenum, uterus, thyroid, frontal, parietal, temporal and occipital cortex, centrum semi-ovale, basal ganglia, pons, medulla and cerebellum show neither larvæ nor inflammatory foci.

COMMENT

The mental attitude of the patients was identical with that seen in encephalitis. It is noteworthy that this is the most fatal form of trichiniasis. "Splinter" hæmorrhages were present under the toenails in one case as well as under the fingernails in both. As far as we know, hæmorrhages under the toenails have not so far been reported in this country. Other notable features were the persistent splenomegaly in case 1, and the detection of the embryos in the blood in case 2, (probably the first time that has been done in this country).

We must thank Dr. W. Allen Daley, medical officer of health, L.C.C., for permission to publish this paper, and Dr. B. A. Young, medical superintendent of St. Alfege's Hospital, Prof. R. T. Leiper, F.R.S., Dr. Arthur Davies, Dr. A. B. Bratton, Dr. E. N. Allott and Dr. E. Davis for their coöperation.

Reviews of Books

Surgery of Modern Warfare

Part V. Editor: HAMILTON BAILEY, F.R.C.S., surgeon to the Royal Northern Hospital, London. Edinburgh: E. and S. Livingstone. Pp. 641–876. 17*s*. 6*d*.

WITH this instalment the book is complete. Wounds of the neck are discussed and the central nervous system is covered by experts in neurology and neurosurgery. A section is devoted to diseases encountered in subtropical countries, another to the administration of casualties in the Navy, the Army and the E.M.S., and an appendix reviews recent articles on war surgery. In the section on the care of the bladder in spinal injuries the author advises suprapubic cystotomy as a routine, a conclusion to which most surgeons of experience are coming. In dealing with burns he shows a reluctance to abandon measures of proven value for such as have yet to stand the test of time. The articles on organisation are excellent, but it is doubtful whether first-aid posts can act as filters, cases being taken there and sorted before being transferred to more fully equipped hospitals. If a patient is ill enough to require an ambulance he should be taken direct to hospital, F.A.P.'s dealing with ambulance cases only when they are isolated or when neighbouring hospitals have been put out of action. Posts near or attached to big hospitals should deal only with walking wounded. The writer on head injuries refers to cerebral compression by bleeding from intracranial veins, without explaining how this can happen with blood at a lower pressure than normal cerebrospinal fluid. The editor reopens the question of tying the vein also when it has been necessary to tie the artery to a limb. The book in fact fairly bristles with controversial matter. A fine level of production has been maintained and here is certainly a standard work in the making.

Medicine and Human Welfare

HENRY E. SIGERIST, M.D., Welch professor of history of medicine in the Johns Hopkins University. London: Humphrey Milford, Oxford University Press. Pp. 148. 15*s*. 6*d*.

"THE study of history is not a luxury," writes Professor Sigerist; but as his 148 pages (including 20 well-chosen illustrations) cost a pretty penny, some may not quite agree with this dictum. However, under his guidance, the study of the history of medicine, if not a luxury, is certainly a pleasure. The subject is approached from the aspects of disease, health, and the physician. Mankind's changing attitude to medicine is surveyed from the earliest religious ideas, through the scientific to the sociological aspect. He describes the salient features of the Babylonian, Assyrian, Greek, early Christian, medieval and modern schools of medicine and relates their development with man's philosophical conceptions of a changing world. His brief sketch is in no sense superficial, for he has used a wide canvas and his sense of historical perspective gives meaning to the realities underlying the illusions that physicians cling to in their profession. Man has gradually become conscious of the need for socialised medicine; advocates of a state medical service will find that L. Mende wrote, as long ago as 1820, that "the state must protect health as its most precious property"; and when we are advised, as human cobblers, to stick to our last, we may gain new inspiration from Virchow who wrote, in 1848, "The Physicians are the natural attorneys of the poor, and social problems fall to a large extent within their jurisdiction."

Professor Sigerist, of course, is writing for an American public, which has as yet no insurance against doctor's bills comparable to our National Health Insurance; but he goes much further than we have done so far in outlining a solution to the sickness problems of the population as a whole—and such problems should be the concern of all true physicians. He is convinced that medicine like education will ultimately become a public service in every civilised country. The scope of medicine has broadened: the doctor is no longer a shaman, priest, craftsman or cleric, and he must be more than a mere scientist. The new physician will be "scientist and social worker, prepared to co-operate in team work and in close touch with the people he serves; a friend and leader, he will direct all his efforts towards the prevention of disease, and become a therapist when prevention has broken down—the social physician protecting the people and guiding them to a healthier and happier life."

Effective Living

C. E. TURNER, A.M., Sc.D., Dr.P.H., professor of biology and public health, Massachusetts Institute of Technology; and ELIZABETH MCHOSE, B.S., M.A., director of physical education for girls, Senior High School, Reading, Pennsylvania. London: Henry Kimpton. Pp. 432. 10*s*.

"To help youth discover ways of effective living" is the avowed purpose of a long and comprehensive book by two American authors. The subject is considered under three heads: effective living for the individual, in the family and in the community. Part I deals with such matters as physical activity, food, social behaviour, care of the skin and teeth; part II with healthful living conditions in the home; and part III with sanitation and public health services. The book is a mine of sound, if perhaps not always very exciting, information; it is profusely illustrated and at the end of each chapter is a searching and formidable questionnaire. Much of the advice given is very proper and sensible. Some young readers may feel that the exhortation not to expect too much of life is a trifle redundant at present while those who worry unduly may feel the need of something more invigorating than "if you have no control over the object of your worry, think of something else." It may well be that effective living is to be achieved by taking thought along the lines advocated in this book; but it is at least equally arguable that this desirable end is often secured by careless souls who never give a thought to the matter at all. Moreover, there is a possible danger that the earnest student might devote so much attention to acquiring the necessary efficiency in living as to leave himself little or no time to live.

THE LANCET

LONDON: SATURDAY, OCTOBER 4, 1941

COLONIAL WELFARE BEGINS ITS CLIMB

OUR colonial empire, as distinct from the dependencies and mandated territories administered by the dominions, is inhabited by 60 million people, two-thirds of whom live in Tropical Africa and the remainder mostly in the West Indies, Ceylon, Hong-Kong and Malaya. The colonies are administered by more than forty separate governments, and are responsible for an enormous volume of trade: in 1939 the value of exports amounted to more than £4 per head of population, the imports to £3 10*s*. About a quarter of the average expenditure is on social services; but since the revenues in many colonies are small in relation to their size, while the field of social service to be covered is very large, the sum is grossly inadequate. The Earl of LISTOWEL, speaking in the House of Lords on July 9, showed how the principle of trusteeship on which the colonies are held and administered had been disregarded until 1929 when the first Colonial Development Act was passed. Even this was aimed more at relieving unemployment at home than at stimulating production of subsistence crops in the colonies. But last year, with the passing of the Colonial Welfare and Development Act, opportunities for raising the standard of living among the native populations have been greatly increased. This Act authorises the expenditure of up to £5 million a year for ten years, with an additional yearly grant of half a million for research. Lord MOYNE, speaking in the same debate, said that but for the war the expenditure authorised might have been much higher. Last year the fall of France made it necessary to convert every available penny into aeroplanes and arms; but this year it is felt that war or no war we must not let the peoples of the colonies—many of whom already live at too low a standard—suffer from the disorganising effects of war. The obligation is the greater because the colonies have been so generous in offering us help, amounting already to more than £20 million. Some have offered their surplus revenues as a gift for the prosecution of the war. Lord MOYNE, uneasy about accepting these generous offers from the poorer colonies, has proposed that they should be accepted as loans, to be repaid in time to come, for post-war development. The effects of the war on the various colonies have been uneven; a few produce materials which are in demand, and they are in a state of unwonted prosperity, especially Malaya and Northern Rhodesia; in others, such as the West Indies, there has been no serious interruption of their usual economy; but a few—especially Malta and Cyprus—are cut off from their ordinary trade; and some have lost their overseas markets through lack of shipping space—West Africa, for example, cannot dispose of cocoa and palm products, East Africa of sisal, Palestine of oranges or Jamaica of bananas. The home government has helped in these difficulties by buying up crops or financing the growers in other ways.

At the outbreak of war there was for a time a tendency towards the arrest of social programmes, but now the aim is to carry on all that were in progress and to plan ahead for others. Much of the personnel, of course, has been seconded for military service, but recruitment has been officially approved and young doctors are advised that service in the colonial empire is of as much national importance as service in the forces. The Mediterranean colonies of Gibralter, Malta, Cyprus and Palestine are in a peculiar position at present and their medical services are necessarily subordinated to war needs. In other colonies schemes initiated before the outbreak of war are still being maintained. In Sierra Leone, for example, a campaign against sleeping sickness and yaws had been newly begun when war broke out and this is being carried on, the cost of it being £50,000 for three years. In the gold fields an attempt to get rid of onchocerciasis by evacuating the area for a time was found to be holding up gold production seriously; Mr. J. J. C. BUCKLEY, D.Sc., of the London School of Hygiene and Tropical Medicine has been seconded there and is making progress in the study of the simulium fly responsible for spreading the disease. In Nyasaland Dr. B. S. PLATT, a member of the staff of the Medical Research Council, directed a team to make a nutritional survey, and this piece of work has been continued although on a diminished scale. The M.R.C. have also coöperated in other directions, and Dr. FRANK HAWKING and Dr. A. J. HADDOW holding M.R.C. fellowships for research in tropical medicine worked in Tanganyika and in Kenya. Dr. E. M. LOURIE, a member of the M.R.C. staff, has been carrying on research in chemotherapy in connexion with the sleeping-sickness survey in Sierra Leone which is being conducted by the local government with a grant from the Colonial Development Fund. Prof. D. B. BLACKLOCK of the Liverpool School of Tropical Medicine, and Dr. CARMICHAEL WILSON of the Colonial Medical Service, are carrying out an investigation at Freetown into the occurrence of malaria there. Dr. G. M. FINDLAY of the Wellcome Research Institute has recently made tours in East and West Africa and the Sudan to study the incidence of yellow fever, and has made reports and suggestions. He has emphasised the need for further research and coördination in the African territories. Much investigation has also been going on at Entebbe under Dr. A. F. MAHAFFY of the Rockefeller Foundation, the unit there having been established for several years. Many public-health measures to be effective must be on a massive scale; for example, a sleeping-sickness campaign is going on in Nigeria, where a fly-free belt is being created some 70 miles long and 20 miles wide—the size (say) of Salop or Wilts. The first part of the work entails the destruction and clearance of jungle and undergrowth and is thus a considerable task. It represents one aspect of a settlement scheme, with the provision of safe water-supplies, of sanitary latrines, and of clean markets for meat and food. In Tanganyika a central development committee has been established and the study of trypanosomiasis and the tsetse fly is going on. In Northern Rhodesia a plan for establishing rural dispensaries is being continued, a new maternity block, the gift of the Beit trustees, and a pathology laboratory have been opened, and there is provision for more hospitals. In British Guiana the spread of malaria and yellow fever is being investigated, with

support from the Rockefeller Foundation. Thanks to the work of Sir FRANK STOCKDALE, comptroller of development and welfare to the West Indies, and his experts, a preliminary survey of nearly all the West Indian colonies is already available and plans are being put forward for various new schemes; numerous health units are being started in all these colonies. Similar health units—designed to educate people in hygiene as well as to treat them—are being planned elsewhere: Ceylon has been a pioneer in this direction. Sir FRANK has also visited St. Helena, where housing is being improved and he has advised on the production of crops there. In Hong-Kong there has been a large reorganisation of Chinese hospitals.

Thus, taking it all round, the health and welfare services of the colonies have not been allowed to drift backwards since war broke out. At the moment developmental work which requires imported machinery or essential war materials cannot be undertaken, owing to difficulties of supply and shipping and because personnel is difficult to obtain; but everything is being done to increase local industries in the colonies, to get them to undertake production of their own necessities, and to extend their internal markets. They are to be encouraged to grow more foodstuffs of the right kind and to improve housing and sanitation; meanwhile the training of agricultural demonstrators, health workers and others to educate the community in matters affecting their social well-being is also proceeding. All this will help to raise the standard of living. Moreover Lord MOYNE is encouraging the colonial governments to put forward any schemes for development, especially in social welfare, which do not require imported material, and is able to assure them that the money to finance them will be forthcoming. He is specially anxious that schemes for development should be drawn up which can be put into action as soon as the war ends. Some schemes have been approved under the new act; many others are under consideration; where war exigencies allow, these no doubt will be approved. This may well be the beginning of a new era in colonial government which will end for ever the charge of our enemies that our colonies are neglected estates.

THE BIOPSY

THE premature death of the Emperor FREDERICK is said to have altered the whole course of modern European history, and there is no doubt that his death from laryngeal carcinoma was accelerated because more attention was paid to VIRCHOW'S negative biopsy reports than to ERNST VON BERGMANN'S clinical impression of malignancy, so that operation was delayed. Even now, after fifty years, the limitations of biopsy have not been clearly defined and the pathologist's colleagues too often rely either too much or too little on the help he can give in diagnosis. Lately surgeons, radiotherapists and pathologists have put forward their views on the value and technique of biopsy at the Faculty of Radiologists. A biopsy may be required to determine the nature of the disease process; or, if that is known, to ascertain its character and so assess the best form of treatment and the prognosis; or it may be used to observe the response to treatment. Even though there is seldom more than a 15% difference between expert clinical and histological diagnoses the conference agreed that a biopsy is an expedient and almost essential preliminary to treatment, but there was much discussion as to the form it should take.

In small lesions of the skin, mouth and breast, where the lesion is reasonably accessible and of such a size that complete local excision can be achieved this is the method of choice. In extensive lesions, where a biopsy can only remove a portion of the tumour, discretion is needed. If the growth is ulcerated there is little danger, though the surgeon may merely remove necrotic material impossible to interpret. In cases of suspected melanoma and anaplastic growths an incisional biopsy is not advisable, and as a rule the endotherm cutting current is preferable to the scalpel. It is well that in this country pathologists have educated surgeons away from the rapid frozen section. When there is considerable doubt about the nature of the condition an experienced pathologist should be in the theatre, but if he cannot make up his mind on the naked-eye appearances of the tissues in situ or when excised it is doubtful if an imperfectly fixed frozen section will help him, and it is better to wait a short while until an adequate preparation can be made. It is true that good preparations can be made in from 30 seconds to 6 minutes, but these methods are seldom adequate for the difficult case; there are numerous tricks which can be employed to accelerate the production of satisfactory sections, many of which are described in a new book by KRAJIAN.[1] In regions not readily accessible to direct excision it is usual to use biting forceps and excise a portion of the growth. This is the routine method employed for growths of pharynx, bronchus, œsophagus, rectum and bladder, but it is open to the disadvantage that a very small fragment is removed, difficult to interpret and not always from the most suspect area.

In deep-seated lesions there is a further possibility—the aspiration biopsy. This method was first used by KÜSS[2] in 1847 but was reintroduced about ten years ago and is gaining favour as a simple outpatient procedure. The technique is simple: the skin area is infiltrated with local anæsthetic or a small dose of Evipan is administered and then a syringe with a wide bore (No. 18) needle is introduced into the tumour; the piston is withdrawn fully and the needle pressed further into the tumour; the direction of the needle is then changed to cut off the column of tissue in the needle, the tension on the piston released, and the syringe withdrawn. The thread of tissue may then be smeared on a slide and treated by Dudgeon's method[3] or embedded in paraffin and sections prepared. The advantages of the technique are obvious and the dangers apparently slight, but it requires close collaboration between the surgeon and pathologist. BARRINGER[4] and MCGAVIN[5] have advocated its use in the diagnosis of prostatic carcinoma, while RUSSELL and CAIRNS[6] have proved its value in cerebral pathology where the Dudgeon smear method enables a diagnosis to be made in a matter of minutes. At the Radiologists' conference, both Dr. FRANK ELLIS and Mr. T. A. GREEN strongly supported it, and ELLIS claimed that it would give reliable results in 70% of cases, though from his figures it is not clear what proportion of cases in which an unsatisfactory or negative aspiration was obtained were subsequently shown to be malignant. When it is impossible to

obtain material by aspiration a punch biopsy with the aid of a trocar may be used and GREEN has devised a modification of this instrument which seems to have some advantages. These methods seem unfortunately to be least satisfactory in breast tumours; indeed CUTLER[7] has said that the hazards and uncertainties of the technique do not justify its use in the diagnosis of borderline breast tumours. Sternal-marrow and splenic puncture are used to good effect by the hæmatologist and to an increasing extent by the bacteriologist, but the dangers of hepatic biopsy[8] outweigh its value and the "ponction triple" of EMIL WEIL has not found many supporters. Nor can aspiration be recommended in lymph-node enlargements, although good results have been claimed; for a satisfactory interpretation of a lymphadenopathy it is essential to have a node from a site of election carefully excised and prepared and examined by the best histological technique. Lately VAN ORDSTRAND and LAMBERT[9] have urged the more extensive use of aspiration biopsy in non-tuberculous infective lesions or neoplasms of the lung and pleura. Turning to uterine pathology, cervical tissue is removed by cautery or biting forceps, and in most hands Schiller's iodine test has not proved reliable; in the uterine cavity curettage has been in use since the days of MUNDÉ, yet the suction curette[10] which has reduced the operation to an outpatient procedure without decreasing its diagnostic accuracy has not yet received the support it deserves. The battle has been waged most furiously in the realm of bone pathology. YOUNG[11] decides strongly in favour of an open biopsy of adequate size in every case of suspected bone sarcoma, and has shown by experiment that aspiration methods are perilous as well as giving uncertain results.

The biopsy having been achieved and the tissue judged to be malignant, the pathologist has then the responsible duty of assessing its degree of malignancy and probable response to treatment. His opinion cannot rest on cytological criteria alone but must be guided by his knowledge of the natural history of that particular type of growth in that situation. This requires close collaboration between the laboratory and the follow-up clinic, and it is to be hoped that this aspect will be considered by local authorities when they are implementing the Cancer Act. The statistics being collected by the clinical cancer committee of the British Empire Cancer Campaign will prove of great value in this respect and no doubt correct many vague clinical impressions. Nevertheless, cytological analysis is of considerable value and many forms of classification have been suggested; that of BRODERS[12] is the most widely used and forms a useful histological shorthand. CATHIE[13] brought forward experimental and clinical evidence to suggest that the amount of residual ash in a microincinerated section was a reliable index of the radio-sensitivity of neoplastic cells and this method of assay should be further investigated. At the Faculty of Radiologists Dr. F. G. SPEAR described a method in which the proportions of resting, dividing, differentiating and degenerating cells at the growing edge of the tumour are assessed and he suggested that they might prove a useful index of the response to radiotherapy; this is clearly a rational method of measurement but must be laborious if it is to be reliable.

The risks of biopsy must be borne in mind. The danger of causing metastases by neoplastic cells forced into lymphatic or vascular channels has been exploded by both clinical and experimental experience; though there is a possibility of implanting neoplastic cells in the healing scar of an incisional biopsy, yet if the tumour is found to be malignant then a radical operation should follow before this can be significant. There is, however, a psychological risk in an incisional biopsy; the patient may agree to this and yet refuse the second radical operation in spite of all advice and procrastinate until a radical operation is impossible. The difficulty is unlikely to follow the comparatively simple aspiration biopsy, and although implantation along the track is possible this can be reduced if a diathermy punch is used. The chief danger of the aspiration biopsy is hæmorrhage either into the tumour itself or as the result of puncture of an adjacent vein; this may be serious and is always alarming, yet it is the experience of those who execute the method that it is relatively infrequent.

It is clear that the aspiration biopsy or an analogous procedure should be used more freely, but before a surgeon resolves to try this diagnostic method he should consult with his pathologist to ensure that the specimens are submitted for examination in a suitable manner; otherwise he may be disappointed.

1. Krajian, A. A. Histologic Technic, London, 1941.—2. *Union méd.* April, 1847.—3. Dudgeon, L. S. and Barrett, N. R. *Brit. J. Surg.* 1934, **22**, 4.—4. Barringer, B. S. *Surg. Gynec. Obstet.* 1936, **62**, 410.—5. McGavin, D. *St. Bart's Hosp. Rep.* 1938, **71**, 209.—6. Russell, D. S., Krayenbühl, H. and Cairns, H. *J. Path. Bact.* 1937, **45**, 501.—7. Cutler, M., Burschke, F. and Cantrell, S. T. Cancer: Its Diagnosis and Treatment, London, 1938, p. 36.—8. See *Lancet*, 1939, **1**, 996.—9. Van Ordstrand, H. S. and Lambert. T. H. *Cleveland Clin. Quart.* 1941, **8**, 175.—10. Lorincz, B. and Davis, A. *Brit. med. J.* 1939, **1**, 261.—11. Young, J. S. *Ibid*, 1937, **2**, 647.—12. Broders, A. C. *Minn. Med.* 1925, **8**, 726.—13. Cathie, I. A. B. *J. Path. Bact.* 1939, **48**, 1.

Annotations

VALUE OF RABIES IMMUNISATION

THOUGH genius by its intuition may open up limitless fields for discovery it may at times clog the wheels of progress, for the disciples of a genius are too ready to regard any questioning of the master's words or deeds as sacrilege. Thus until the last few years, and despite the fact that it has been practised all over the world, there has been no serious attempt to determine whether antirabic immunisation is really of any value. On July 6, 1885, Pasteur announced the successful use of a prophylactic vaccine on a boy, Joseph Meister, who had been bitten fourteen times by a mad dog. The scene has been immortalised by the statue which now stands in the gardens of the Pasteur Institute in Paris, but Meister's cheery smile will no longer greet those who seek their letters in the concièrge's lodge, for Meister committed suicide soon after the German occupation. The institute's figures show that the fatality among the treated patients fell from 0·9% in 1886 to 0·3% in 1890; it varied between 0·2 and 0·35% for the next 30 years, while since 1922 it has been zero, except in 1924.[1] According to McKendrick's reports[2] from various Pasteur institutes the fatality from rabies after vaccination with various vaccines has ranged from 0·23 to 0·49%. Denison, McAlpine and Gill[3] reported 21 fatal cases of rabies among 34,864 vaccinated people in Alabama (0·06%) from 1922 to 1936. On the other hand, it is possible that the value of the Pasteur treatment has been

1. Cruveilhier, L. and Viala, C. *Ann. Inst. Pasteur*, 1932, **60**, 661.
2. McKendrick, A. G. *Bull. Hlth Org. L.o.N.* 1937, **6**, 17; 1938, **7**, 1; 1940, **9**, 31.
3. Denison, G. A., McAlpine, J. G. and Gill, D. G. *Amer. J. publ. Hlth*, 1937, **27**, 869.

overestimated. Denison and Dowling[4] for instance, reported 48 cases of rabies in nearly half of which prompt and adequate prophylactic treatment had apparently been given. Ratcliffe[5] found that of 40 fatal cases of rabies 12 had received Pasteur treatment. Yü[6] has lately recorded that from July, 1923, to August, 1940, 383 patients attended the medical department of Peiping Union Medical College because of dog bites; of this series 201 were vaccinated and 182 were not, either because they refused or because they were bitten by dogs which were proved to be normal. Among the 201 vaccinated people there were 9 (4·5%) cases of rabies; among the 182 unvaccinated 18 (9·8%). In 2 of the vaccinated people in whom rabies developed vaccination was started a fortnight after the bite, possibly too late. The failure of the immunisation could not in the others be ascribed either to delay in treatment or to severity of the wounds; neither could the viruses obtained be identified as reinforced viruses in the sense used by Koritschoner, although in all the cases the first symptoms appeared within 14 days after inoculation and the viruses isolated became fixed after from 3 to 10 passages. Even when no cases of rabies develop the value of the Pasteur treatment is not absolutely proved. Thus in Shanghai Lieou[7] reported that 402 complete Pasteur treatments were given from 1937 to 1939; no case of rabies was observed. However, of the supposedly rabid animals 249 were definitely proved to be free from rabies, 106 were suspected on various grounds of having rabies, 10 had clinical symptoms of rabies and only 37 were proved experimentally to be rabid. Of the 37 people who were associated with the animals proved to be rabid only 17 were actually bitten, 9 had had their hands covered with saliva and 11 were licked by the rabid dogs. It is known that rabies can be contracted by contact with the saliva of a rabid animal but there is little or no evidence to show how often this happens, while according to Kelser[8] only about 25% of people bitten by rabid dogs actually develop rabies. It seems then that in less than 5 out of 402 patients is there any actual proof that rabies was prevented. Similarly 442 people received the Pasteur treatment in Paris in 1937 but in only 2 instances was the diagnosis established by histological examination of the dogs' brains. Before the value of the Pasteur treatment can be fully assessed much further work will have to be carried out both experimentally in the laboratory and in man. Statistics must be based only on cases which can be proved to have been bitten by rabid animals, while the characteristics of the viruses isolated must be carefully studied. If after thorough investigation the present method of immunisation is found to be inadequate it should be scrapped. Pasteur would be the first to encourage us to find a better.

JOINT RENOVATION

ANY contribution is welcome that tends to lessen the feeling of helplessness in dealing with severe osteo-arthritis. Magnuson's[9] results with operative treatment based on purely mechanical considerations are particularly encouraging. He confirms the experimental findings of Bauer and Bennett[10] that the pathological changes are probably the result of frequent minor traumata and that the typical marginal exostoses are produced in the effort to stabilise a joint which has suffered ligamentous injury or damage to articular cartilage. Once these exostoses are formed they limit movement and a vicious circle of recurrent trauma and new peripheral bone formation is set up. Clinically, operation aiming at complete removal of mechanical irritants from the joint surfaces was performed on 62 cases with entire relief in 60; no formal synovectomy was carried out since this does not appear to be called for in non-rheumatoid cases. In the hip, where old Perthes's disease or slipped epiphysis is often the primary lesion, removal of marginal osteophytes and the overhanging acetabular lip gave gratifying results; in the elbow, after wide exposure with reflexion of the olecranon, the smoothing down of transverse ridges lying in the sigmoid notch was often necessary. The knee was most commonly involved and an extensive toilet is advocated in which the condylar margins are excised, all degenerated cartilage removed down to firm fibrocartilage or eburnated bone, the menisci dealt with if injured, and the patella shaped with the chisel to glide unobstructed between the femoral condyles. Movement was begun on the fourth post-operative day, with gentle passive encouragement and muscle re-education, and weight-bearing by the tenth day. It is then of cardinal importance for the patient to hold the joint quite straight and to use sticks only; the pain of walking on the slightly flexed knee or the use of crutches will defeat the surgeon's endeavours. Magnuson's results give point to the observation of Kelikian[11] that trauma and trauma alone is the primary affection of articular cartilage and that metabolic or endocrine factors are only secondarily associated with osteo-arthritis. They are encouraging, too, since operations of this type, as opposed to arthrodesis or arthroplasty, have not been very popular. It may well be that such a careful removal of mechanical irritants is better than a formal synovectomy or capsulotomy, or the casual removal of osteophytes; but the operation is not a minor one and, unless the patient gives whole-hearted coöperation, may leave him worse than before.

FIBROIDS

IN reviewing the cases of myomata treated in their wards Mahfouz and Magdi[12] of Cairo discuss almost every aspect of this common tumour including the history of its surgery. Avicenna in the 11th century described and advocated the excision and avulsion of vaginal polypoid myomata with or without ligation of the pedicle, and he seems to have been the first to approach the problem of myomata from a purely surgical standpoint. All sorts of procedures were tried by the earlier surgeons, including ligation of the uterine vessels and ovarian castration, in an effort to diminish the blood-supply to the tumour. The name of Lawson Tait will always be associated with this latter procedure; he claimed that the "whole merit of the thing, however much or little it may be, belongs to British surgery," for there was considerable competition from the United States and the Continent to establish a prior claim for its invention and successful performance. Tait's first successful ovarian castration was performed in 1872. A few years before this, in 1863, Spencer Wells had performed the first two abdominal myomectomies, and in the same year Charles Clay of Manchester performed the first successful supravaginal hysterectomy in Europe. Clay ligated the whole uterine stump with three strands of Indian hemp and only took fifteen minutes for the whole operation. The patient left hospital 35 days later.

In their series of 931 cases of myoma all treated by operation Mahfouz and Magdi note some interesting facts: 86% were multiple, 14% single; 58% intramural, 24% submucous and 18% subserous; only 2% were cervical in situation. Ovarian cysts were associated in 16% of their cases and inflammatory disease of the adnexa in 28%. This latter complication they regard as a serious one in that it considerably increases the fatality, the commonest cause of death being peritonitis in 52% of

4. Denison, G. A. and Dowling, J. D., *J. Amer. med. Ass.* 1939, **113**, 390.
5. Ratcliffe, A. W. *Arch. intern. Med.* 1940, **66**, 478.
6. Yü, T. F. *Chin. med. J.* 1941, **59**, 326.
7. Lieou, T. C. *Bull. med. Université L'Aurore*, 1940, **5**, 84.
8. Kelser, R. A. Harvard Symposium on Virus and Rickettsial Diseases. Cambridge, Mass. 1940. P. 642.
9. Magnuson, P. B. *Surg. Gynec. Obstet.* 1941, **73**, 1.
10. Bauer, W. and Bennett, G. A. *J. Bone Jt Surg.* 1936, **18**, 1.
11. Kelikian, H. *Surg. Gynec. Obstet.* 1940, **71**, 416.
12. Mahfouz, N. P. and Magdi, I. *J. Obstet. Gynæc.* June, 1941, p. 293.

the fatal cases. Axial rotation of the tumour occurred in 5 patients, the cause being a pedunculated subserous fibroid. Various degenerations were noted in 18% of the tumours removed and red degeneration in 6 cases. In 3 cases the tumours had become detached entirely from the uterus and gained a new parasitic foothold on the omentum. Malignant degeneration was encountered in 3 cases—a low incidence, for in England the generally accepted figure is 1%. The operations performed were: subtotal hysterectomy in 459 cases with 9 deaths; abdominal myomectomy in 362 cases with 5 deaths (a very creditable achievement, for myomectomy in this country is recognised to carry a fatality of 5% and subtotal hysterectomy 2%); vaginal myomectomy in 93 cases with 4 deaths (this high fatality is explained by the large infected masses impacted in the vagina after years of ill health and hæmorrhage); and finally total hysterectomy in 18 cases with 3 deaths (a high figure, explained as due to tubo-ovarian infection resulting in peritonitis). The number of myomectomies is large. The reason for this in Egypt is largely a social and religious one, for fertility is of tremendous importance there, but at the same time it does the surgeons concerned great credit for holding a conservative outlook. Here Victor Bonney has preached just such a doctrine for years. Its soundness is illustrated by one of the cases in the Cairo series, a woman of 38, married ten years without issue, in whom they enucleated 52 myomata. This lady was 16 months later delivered of an heir. How many surgeons would have sacrificed the uterus? Mahfouz and Magdi put the recurrence figure after myomectomy at 5%. They regard the operation as dangerous if the cavity of the uterus has to be opened or if multiple incisions are needed for the enucleation of many tumours. The incidence of stump carcinoma in the cervix after subtotal hysterectomy was nil. The work of these two surgeons is a strong plea for conservatism and a wider adoption of myomectomy whenever myomata are encountered in a uterus that is still potentially capable of being impregnated. They undoubtedly favour the subtotal operation as against the total in hysterectomy and this will give many English and American gynæcologists food for thought.

MEDICAL REPORTS AND CERTIFICATES

THE legal position and usual practice with regard to medical reports and certificates is succinctly set out in memorandum No. 156, issued by the Central Bureau of Hospital Information.[1] Legally neither a hospital nor its medical staff is obliged to give reports or certificates to any third party outside. The only legal method of extracting information from the medical officer is to subpœna him to give evidence in a court of law. This does not oblige him to say anything to anyone outside the court, and even in court he can object that the information is confidential, although the tribunal may decide to overrule his protest that disclosure would be a breach of professional secrecy. The patient's consent should always be obtained before giving a report or certificate; one large London hospital refuses all reports unless application is made on a particular form (appended to the bureau's memorandum); this form contains a space for the patient's express consent in writing.

The memorandum usefully sets out the usual practice about fees. Hospitals generally allow a medical officer to receive the fee charged for a report; they sometimes collect the fee for him. The fee does not commonly exceed two guineas; it may be less (according to the circumstances or the patient's means) or nothing at all. In road-accident cases one large London hospital charges a fee of two guineas to an injured patient who wants a medical report to support his claim for compensation. This fee is collected only if the claim succeeds (presumably because in that case the plaintiff recovers it from the defendant); it is then handed over to the medical officer who made the report; if the claim fails the hospital itself pays the doctor a fee of 10*s.* 6*d.* Where a patient wants a medical certificate in order to recover newspaper insurance compensation, the fee is usually 5*s.*, as the amount recovered is small. Where a medical certificate (usually the confirmatory certificate) is given by a hospital medical officer under the Cremation Regulations, the usual fee is a guinea. It may be recalled, in passing, that regulation 8 of the 1930 regulations, requiring certificates from the deceased's medical attendant and the confirmatory certificate from another practitioner, is suspended by Defence Regulations where the registrar has certified that death has been registered as due to war operations. Hospitals sometimes charge 1*s.* for "admission and discharge" certificates; more often they are given free. Nor is it usual to charge for an "unfit to work" certificate. Forms of "unfitness to work" and "admission and discharge" certificates are appended to the memorandum. There is also a simple form of general information certificate. This is useful where a rough idea of the disability is needed, rather than the medical details—for example, where a workman is in hospital and the employer wants to know whether the injury is so serious that another workman had better be engaged in his place.

1. Obtainable from the director of the bureau, 12, Grosvenor Crescent, S.W.1. 3½*d.* post free.

HISTIDINE AND HISTAMINE

SUBSTANCES which give specific chemical reactions are much more easy to follow and investigate than those which do not, and this generalisation is well illustrated by the amino-acids. Most of those with closed rings or unusual chemical groupings in their molecules can be induced to react in some way which betrays their presence whatever the circumstances, and this has favoured their isolation and investigation. Those with straight chains are much more difficult to characterise, and, although progress is always being made, much less is known about their occurrence and distribution. Indeed threonine was only detected, and that quite recently, because an elaborate investigation led to the discovery that rats would not grow on a synthetic mixture which did not contain it. The amino-acid which is known to the biochemical fraternity as histidine and to their purer chemical cousins as β-iminazole-α-aminopropionic acid gives colour reactions with bromine which enable it to be detected and estimated in minute quantities in the body fluids; and histamine, the primary amine formed from it by decarboxylation, has equally striking pharmacological properties by which it can be traced. Both these substances have been stated to occur in urine, and their presence there has recently been proved by elaborate checking and rechecking of the methods by which the compounds were first detected and estimated. It has been shown that histidine[1] is a constituent of normal urine, and up to 80 mg. per 100 c.cm. have been found there. Larger amounts are excreted during pregnancy. The quantity depends partly on the subject and partly on the food, and although there are other factors regulating this excretion which have not been exactly defined the histidine appears soon after conception and its elimination seems to be related in some way to the increased excretion of the gonadotropic hormones. Pregnant animals do not excrete histidine in this way—a good example of the biochemical differences which exist between animal species and add such zest to comparative physiology. During the severe toxæmias of pregnancy histamine is excreted; it must be formed from histidine, but why the toxæmias should bring about the appearance of this highly reactive body, and whether it plays any part in the production of the toxæmic syndrome is still obscure. It is evident that we have still much to learn

1. Racker, E. *Biochem. J.* 1941, **35**, 667; Kapeller-Adler, R. *Ibid*, p. 213.

about histidinuria and histaminuria; and furthermore, we know nothing at all about the excretion of all those other amino-acids which we cannot readily detect and estimate. Taking the normal range of histidine excretion to be up to 80 mg. per 100 c.cm. of urine, this amounts to more than 1 g. per day—quite a large quantity of a valuable and essential bodily constituent. We know of no syndrome due to histidine deficiency, but this rate of loss suggests that such a thing is not inconceivable.

FRACTURED MANDIBLE

In the last war and up to now in the present one the treatment of fractures of the mandible at or posterior to the angle has presented insurmountable difficulties when the patient has no teeth. Here, as in other fractures, correct apposition of the ends of the broken bone is the first essential to bony union, and such apposition is very difficult to attain because when the fracture is far back in the region of the last molar the small posterior fragment is drawn upwards and inwards towards the midline by the pterygoid and temporal muscles. The many ingenious appliances so far devised have mostly failed to keep the ends together, so that the patient has been left with fibrous union and deformity. Moreover, they usually entailed immobilisation of the jaw leading to difficulties in feeding and delayed union from prolonged lack of function. Last November Vaughan Tomey suggested to the central counties branch of the British Dental Association in Birmingham that external splinting might be feasible, and the two papers published in this issue demonstrate that it is. Dr. Pohl grips the fragments with hook-screws of his own design and welds the screws together by an external metal bar. Mr. Rainsford Mowlem and his colleagues at Hill End maxillo-facial unit use crossed Kirschner wires inserted into each fragment, and fix them by an external clamp. Pohl has applied his technique to one case; the other has been used in 19. Both have the advantage of allowing some measure of mastication as soon as the splint is applied.

A SOCIAL DIAGNOSTICIAN

Diagnosis must come before treatment, and in his second examination[1] of the symptoms of social ill in York, Mr. Seebohm Rowntree once more, as in 1899, diagnoses poverty as their cause. In his preface he disclaims any wish to prescribe for the disease, contenting himself with a masterly picture of the syndrome. He discusses the remedies that lie to hand, but leaves the choice of treatment to others. He has made his diagnosis on the result of a house-to-house visitation of over 16,000 families—almost the whole working-class population of York—and in a chapter, which he modestly assumes will interest only the statistician, he compares his figures with those which might have been obtained by the more usual sampling methods. Mr. Rowntree's technique gives an objective picture of the economic situation of the city, of its housing, of its public-health and education services, and of the leisure-time habits of its inhabitants. He found that the proportion of the working-class population living in abject poverty has been reduced by more than half since 1899, but that rather more than half of the working-class children under one year of age were still living below the poverty line; 47% of them would probably remain in poverty for five years or more, and 31% for ten years or more. Yet Mr. Rowntree's standards of poverty are not indulgent. He has taken as his criterion for a man and wife with three children a minimum income of 43*s*. 6*d*. after rent and rates are paid.

But during the last forty years there has been progress as well as poverty. Housing in York shows a persistent upward trend, and both social and public-health services have increased to a remarkable extent. The chapter on health records a fall in the general death-rate of a half, and in the infant mortality of two-thirds, but even so the infant death-rate was nearly twice as high in the poorest class as in the highest class of those investigated. Reduced working hours combined with increased facilities for recreation have led to widened activities and interests for workers of all ages. Less money is spent on drink, but the enormous growth of gambling has created a new "Public Enemy No. 1," and in these circensian days Mr. Rowntree urges that leisure should be a time of re-creation and not escapism. Andrew Lang is reputed to have said "Many use statistics as a drunken man uses a lamp-post—for support rather than for illumination," but Mr. Rowntree has used them as a searchlight on the murky limitations which poverty imposes on the life and health of our people.

1. Poverty and Progress. London: Longmans, Green and Co. Pp. 540. 15*s*.

RETINAL DYSTROPHY

The Lawrence-Moon-Biedl syndrome is a rare inherited condition in which small stature, hypogenitalism, obesity, retinitis pigmentosa, polydactyly and mental defect are associated. The genetics of its inheritance are highly involved, and the evidence available is not enough to establish the gene abnormality that underlies it. R. W. B. Ellis and F. W. Law[1] record an incomplete example of the full syndrome—an obese undersized child of normal intelligence, with hypogenitalism and retinal changes. Mental defect and polydactyly were lacking in her case, but a maternal uncle had a supernumerary digit and a sister was mentally defective. These observations alone will hardly make the genetic picture clearer, though they may be set alongside Sorsby, Avery and Cockayne's observation[2] of "the frequent occurrence of one or more components of the Lawrence-Biedl syndrome in the ascendants of patients showing the full syndrome." Ellis and Law describe the retinal defect in their case in some detail. The retinæ appeared thin, especially at the maculæ, which were atrophic. The choroidal vessels were easily seen. There was general deficiency of retinal pigment, but a number of plaques or veils of pigment, varying in size up to twice the diameter of a disc, were scattered over the retinæ, lying at about the level of the retinal vessels, and there was a peppering of the macular area with pigmentary dots. These appearances bear no resemblance to what is commonly called retinitis pigmentosa, although they agree fairly closely with Lawrence and Moon's description of their original cases. In other published records considerable variation in the retinal appearances is found, but few of the accounts approximate to that of typical retinitis pigmentosa. Ellis and Law therefore suggest that, for the sake of precision in terminology, the term retinitis pigmentosa, applied to a component of the Lawrence-Moon-Biedl syndrome, be dropped and "retinal dystrophy" be used instead. They quote Lawrence and Moon who said (in 1886) "In calling these cases by the name of retinitis pigmentosa, we have been guided rather by usage than by the intimate nature of the cases."

1. *Arch. Dis. Childh.* 1941, **16**, 105.
2. Sorsby, A., Avery, H. and Cockayne, E. A. *Quart. J. Med.* 1939, **8**, 51.

Sir Girling Ball has been appointed a member of the Shakespeare Committee in place of Sir Alfred Webb-Johnson, who retains his membership in the capacity of president of the Royal College of Surgeons.

A luncheon party at Grosvenor House on Monday celebrated the 21st anniversary of the opening of the Tavistock Clinic, where the first patient was received on Sept. 27, 1920. Since that day 14,700 patients have been treated at the clinic in Tavistock Square, in Malet Street, and since the outbreak of war at Westfield College, Hampstead. Colonel J. R. Rees, the medical director, said that these patients had come from every county in Britain.

Special Articles

NUTRITION OF RURAL CHILDREN IN WAR-TIME

DAGMAR CURJEL WILSON
M.D. GLASG., M.R.C.P., F.R.C.O.G., D.P.H.
WOMEN'S MEDICAL SERVICE, INDIA (RETD.)

IN December, 1939, and January, 1940, I obtained records of the state of nutrition of a group of children who might be expected to continue to live in the same neighbourhood. It seemed possible that war-time diet might prove detrimental to health, and that such records would prove useful for comparison. Schools were chosen for the survey since growing children show evidence of dietary deficiency more readily than adults. Children of rural Oxfordshire were selected as suitable, children from the evacuated areas being carefully excluded.

Overcrowding of the schools by evacuees hampered examination, so the tests used were limited to those which previous nutritional surveys[1] had shown to give close correlation with nutritional deficiency. The following definite and easily recognised signs of vitamin deficiency were sought: follicular hyperkeratosis (phrynoderma); xerophthalmia and keratomalacia; angular stomatitis (cheilosis); congested gums (purple discoloration or bleeding); rickets (including the lesser degrees of enlarged epiphyses and bossing). Assessment of the state of nutrition was also made according to the standards of the Board of Education (Health of the School-child, 1937). Such assessment is largely subjective, but when all the children are examined by the same observer results are obtained which are useful for comparison. Dental observations (decayed, missing and filled rates) were made and special points of clinical interest were also noted.

Visits were paid to 41 different places in Oxfordshire; 1568 children were examined, 531 aged 6–7 (group A), 508 aged 10–11 (group B) and 529 aged 13–14 (group C). Fourteen months later the same schools were revisited; some children had meantime moved to senior schools and others had left school on reaching the age of 14, but it was possible to examine 499 children again—316 in group A and 183 in group B. The numbers of group C remaining were too few to justify comparisons. The results of the two surveys are compared in table I.

TABLE I—STATE OF NUTRITION OF 1568 SCHOOL-CHILDREN IN DECEMBER, 1939, COMPARED WITH THAT OF 499 OF THEM IN FEBRUARY, 1941

Group	When examined	Total	Boys	Girls	Signs of vitamin deficiency					Nutrition			
					Phryno-derma	Xeroph-thalmia	Cheilosis	Congested gums	Rickets	Excellent	Good	Subnormal	Bad
A*	Dec. 1939	531	260	271	..	..	4	..	27 (5%)	% 32	% 58	% 10	% 0
	Feb. 1941	316	145	171	..	..	1	..	6¶ (1·8%)	29	58	12	0
B†	Dec. 1939	508	259	249	..	..	5	..	19 (4%)	29	59	12	0
	Feb. 1941	183	95	88	..	..	3§	..	..	35	53	12	0
C‡	Dec. 1939	529	286	243	..	..	4	..	9 (1%)	37	57	5	0
	Feb. 1941	Too few to permit of comparison.											

* A (aged 6–7 in Dec. 1939). † B (aged 10–11 in Dec. 1939).
‡ C (aged 13–14 in Dec. 1939). § All new cases. ¶ 3 new cases.

If the 499 children who were examined twice are considered separately, there is no evidence of significant deterioration in their nutrition after fourteen months; that is, there has been no increase in signs of vitamin deficiency and no falling off in the state of nutrition as assessed by the same observer. At the outset and during the period of inquiry the existence of a slight degree of dietary deficiency was indicated by the occurrence of cases of cheilosis and of low grade rickets, but the incidence of these did not increase significantly (table II). Indeed, although the number of cheilosis cases was slightly higher at the second examination the number of cases of rickets was noticeably lower, even allowing for the expected decrease in signs of rickets with advancing age of the child. It seems probable that more signs of deficiency would have been found but for the widespread adoption of the county school-milk scheme. Throughout the investigation most of the children were receiving ⅓–½ pint of milk daily in school, an amount which though not sufficient to ensure a high standard of health might prevent open clinical signs of deficiency.

During the inquiry visits were paid to the homes of families in different villages. It was found that the diet of some of the poorest households had actually improved, thanks to more regular wages or allowances received by the father on changing from low-grade agricultural work or casual labour to war-time duty. Inquiry in the homes of rachitic children showed that they belonged to large families where the mother had apparently given up the struggle of trying to make ends meet satisfactorily on a low income; often more than one child showed signs of rickets.

TABLE II—INCIDENCE OF RICKETS AND CHEILOSIS IN THE 499 CHILDREN EXAMINED TWICE

—	Examined	Cheilosis	Rickets
Group A ..	Dec. 1939	1	20
	Feb. 1941	1 (same case)	6 (3 new cases)
Group B ..	Dec. 1939	2	8
	Feb. 1941	3 (all new cases)	Nil

The occurrence of cheilosis among these Oxfordshire children is of interest because this clinical sign of riboflavin deficiency has not hitherto been sought during school health inspection in England. Cheilosis—as evidenced by white sodden excoriation at the angles of the mouth—was noted in 17 of the 1568 rural children examined during this inquiry. It was present in 13 of those seen at the first examination and 4 of those seen at the second examination. Of 13 cases revisited 11 cleared up without treatment within a period of eight weeks; 2 cases of greater severity did not improve spontaneously, and at the end of eight weeks were treated with pure riboflavin. Both these children belonged to large families of low-grade agricultural labourers. The most severe case, in a girl aged 13, healed after treatment with riboflavin 30 mg. over a period of thirty days, but relapsed three months later, and required an additional 40 mg. of riboflavin over twenty-four days for cure. The second case, in a boy aged 6, was less severe and was cured by riboflavin 20 mg. over twenty-three days, and remained free of symptoms during four months' subsequent observation. He had been recognised as undernourished at routine school medical inspection, and was receiving 1 pint of free milk daily at school. The presence of riboflavin deficiency, in spite of such a daily milk consumption, may be explained by the low riboflavin content of milk at certain seasons.[2]

SUMMARY

The nutritional state of 499 rural Oxfordshire schoolchildren was determined in December, 1939, before the introduction of rationing, and again in April, 1941, after more than a year of dietary restrictions. There was no sign of increasing nutritional deficiency and no deterioration in the state of nutrition as assessed by the same observer. Some degree of deficiency of the vitamin-B_2 complex was present throughout the period of observation as indicated by the presence of 17 cases of angular stomatitis (cheilosis) among 1568 children between the ages of 6 and 14. Pure riboflavin was successfully used to treat 2 cases.

I am indebted to the education committee of Oxfordshire county council for access to the schools, and to Dr. H. C. Jennings, county medical officer of health, for the assistance of health visitors in home visiting. Pure riboflavin was provided by Messrs. Roche Products.

1. Wilson, D. C., Widdowson, E. M. and Wait, C. *Lancet*, 1937, **2**, 1445.

2. Houston, J., Kon, S. K. and Thompson, S. Y. *J. Dairy Res.* 1940, **11**, 145.

MEDICINE AND THE LAW

Punishment for Bogus F.R.C.S.

UNQUALIFIED practitioners who are guilty of sheer fraud will attract little public sympathy. On June 23 James Leroy McCune, aged 40, described as a physician, of Alma Square, St. John's Wood, was arrested on the charge of wilfully and falsely pretending to be a physician. He was subsequently charged at Marylebone with wilfully and falsely pretending to be a Fellow of the Royal College of Surgeons on June 24, with a further similar charge relating to Aug. 20. A detective sergeant informed the magistrate that he found a car, with the word "Doctor" on the windscreen, outside the accused's address: on a door-post was the visiting card "James L. McCune, M.D., M.A., F.R.C.S." Told that he would be charged with pretending to be a physician, McCune replied "I am." Documents bearing the name "Dr. McCune" were inside the car. He had examined a boy on June 23 who was suffering from hay-fever and had told the boy's grandmother that he was suffering from congestion of the lungs and eye trouble, and that, if not taken care of, he might have T.B. The boy had neither of these diseases. Writing to the patient's grandmother, the accused signed himself "James McCune, F.R.C.S., physician and surgeon." He pleaded guilty. He had 20 previous convictions in Australia and two in this country; 17 were offences of dishonesty. McCune said he put the label on his windscreen to avoid being questioned about petrol rations. He had obtained no financial benefit by posing as a doctor. The police witness did not agree with this statement; there was a warrant against the accused at Edinburgh over the purchase of a practice. It was also said that, being a married man with two children, he had been posing as an unmarried man and associating with a 21-year-old unmarried woman from whom he had borrowed £20.

Mr. L. R. Dunne fined him £60 or two months' imprisonment, and refused to allow time for payment of the money. It was always a serious matter, said the magistrate, for an unqualified person to hold himself out to be a qualified medical practitioner; but it was much worse when the person was a man of bad character.

Child's Death in Hospital

We noted lately in this column an allegation of delay in treating a child admitted to a Manchester hospital for serious burns. The Manchester public health committee appointed a subcommittee to investigate the occurrence. The subcommittee's report, adopted by the full committee, disposes not inadequately of the complaints which had led the coroner to criticise those concerned.

The report establishes the following facts. The ambulance arrived at the hospital as the clock was striking 2.30 P.M. Three minutes later the assistant resident medical officer examined the child in the admission ward; it was then wrapped in warm blankets. He ordered an injection of morphia. At 2.40 he described in detail to the medical superintendent the areas affected by the burns. He put aside his other duties and went to the surgical ward. Morphia was injected at 2.45 and the child had been removed to the surgical ward by 3, at which time the assistant resident medical officer, putting aside his other duties, went to the ward and gave the intravenous injection of blood plasma; he remained with the child till after 5 P.M. No complaint of delay was received until a police officer attended the hospital to take statements. The report suggests that the absence of complaint gives conclusive value to the times entered in the drug book and case-record.

The subcommittee had previously considered the propriety of the treatment. Competent opinion was agreed that the child was suffering from severe burns and shock; that it would be bad practice to attempt to treat the burns until the child had been treated for shock; that the proper treatment was to apply warmth and to inject morphia; that, after the morphia, no further treatment must be given until there had been time (approximately 15 minutes) for the morphia to take effect, and that during this interval the child should not be moved. Competent opinion advised the committee that not only was this the proper treatment to apply in the first instance but that this was the treatment in fact given. After this preliminary treatment, and not before, it was desirable to give an intravenous injection of blood plasma. Here also the correct treatment was given. The report thus removes the adverse impression left by the inquest proceedings. If it was right that the matter should be ventilated before the coroner, it is fair that the result of the hospital inquiry should also receive publicity.

Counterclaims for Professional Negligence

Allegations of professional negligence are a not unfamiliar sequel or set-off to a claim for fees. The practitioners to whom the fees are owed have then to consider whether the trouble of suing the defendants is worth while. Allegations, however ill founded, must be rebutted; their "nuisance value" looms large to a practitioner who has other preoccupations more profitable and attractive than a day in court. A successful claim for fees, on the other hand, promotes the advantage of the profession as a whole. The labourer is worthy of his hire and there is no reason why he should submit to what he may regard as the process of being blackmailed out of it.

In McKeag *v.* Shah, a recent case in the Bath county court, the defendant was doubtless misguided rather than mischievously minded. The plaintiff, a dental surgeon, sued him for a fee of half a guinea for the extraction of a tooth. The defendant filed a long letter in answer and counterclaimed for £15 for alleged negligence. Having read the letter, the judge told the defendant that, on his own showing, there must be judgment for the plaintiff for 10*s.* 6*d.* with court fees; his allegations were serious; had he, asked the judge, any professional evidence in support of them? Mr. Shah had fortified himself with no such testimony. He gave his own story of the extraction; a fragment of the tooth, he said, had been left behind; there was continued bleeding and swelling afterwards, for which treatment was required. Mr. R. K. McKeag (who holds a medical as well as a dental qualification) gave evidence that it was a perfectly normal extraction; for reasons which he explained to the court there was more than ordinary bleeding in a certain percentage of cases. The defendant asserted that an X-ray photograph should have been taken before probing; Mr. McKeag replied that this was unnecessary. The judge found for the dentist on the claim and found against the defendant on the counterclaim for damages for negligence. The allegations, said the court, were entirely without foundation, ought never to have been brought, and, having been brought, ought not to have been persisted in. The dentist had given sound advice and excellent treatment and had been most wise in coming to court and facing the allegations. "So far from having his reputation impaired, he will, in my judgment, have established it on a higher footing." Here, at any rate, we may conclude, the trouble of suing for a fee was well worth while.

VAPORISED SULPHONAMIDE IN BRONCHIECTASIS.—Three Argentine physicians[1] are using a method of treatment for bronchiectasis and other forms of chronic pulmonary suppuration, which in their hands has proved highly successful in cases where ordinary medical measures have failed. Inhalations of a vaporised solution of Prontosil Soluble are given thrice daily. For each inhalation 3–5 c.cm. of the 5% solution is used, made up to 25 c.cm. with saline and vaporised in a special apparatus. Treatment must be continued for at least three months, and each patient receives on an average a total of 50 g. of prontosil soluble. The only toxic effect observed has been diarrhœa, which in a few cases has been persistent enough to preclude further use of the drug. In these cases Rivánol inhalations have been substituted, but this drug has an unpleasantly bitter taste. The method can easily be used for ambulatory patients.

1. Castex, M. R., Capdehourat, E. L. and Lavarello, A. *Arch. argent. Enferm. Apar. resp.* 1941, 9, 29.

In England Now

A Running Commentary by Peripatetic Correspondents

I WAS talking the other day to the former chief of the gastro-enterological section of the Sanidad de Guerra—the Spanish Republican R.A.M.C. This brilliant surgeon has spent the last two years (with an interval when he was torpedoed while working in Atlantic convoy) reading the surgical literature of this country and has become an ardent admirer of the British School of proctology. After so long a wait it seems almost unbelievable that his skill and that of his other colleagues may soon be at our disposal. He told me about a staff routine which the Sanidad kept up even in the bitter final phases of the Republican's defeat. The case-records of every wounded soldier were centralised on the desk of a specialist and so my friend received the reports of every abdominal injury. These would comprise the front-line casualty card, the operation notes dictated to the anæsthetist during the course of the first surgical intervention near the line itself, the ward notes in that same advanced surgical post, the notes made in the hospital train and the record of the base and convalescent treatment. He would analyse these and send to each surgeon concerned a note of the end-result of his work together with comments given not in the form of military orders but as the advice of a senior colleague to a co-worker in a common task. He did not believe in rigid standardisation of treatment, for, as he said, putting a doctor in uniform may make him keep step and salute but cannot be used as a means of depriving him of his own professional initiative and judgment. Standardisation pushed to these lengths defeats its own end. It would be interesting to know whether R.A.M.C. methods do permit of such coördination of surgical work.

* * *

THE EGO AND THE ID

Said the Ego to the Id :
" Pray tell me all you did
In the days when your subconscious fast was locked ;
It would interest me vastly,
Be it ne'er so grim and ghastly,
And, let me add, I'm very rarely shocked.

For myself," continued Ego,
" I early learned to leggo
And see my fancy take me where it would,
But years of self-expression,
Have left me the impression
That I've always really hankered to be good."

Quoth Id : " When I was five,
I used to catch alive
And torture little insects by the hour,
At six I shot my sister,
I can't pretend I've missed her,
This complex Adler calls the lust for power.

I spent the next few years,
Despite my parents' tears,
Defying every code or book of rules,
My elders and my betters
Received indignant letters
Demanding my removal from five schools.

Throughout my teens I joyed
In libidos dear to Freud,
The twenties saw me rush from crank to crank,
I tried out thirty diets,
I headed fifteen riots,
I broke my father's heart and broke his bank.

I've dabbled since that time
In every sort of crime,
And sowed a goodly harvest of wild oats,
I've tried my hand at arson,
But since meeting with a parson,
I feel the time has come to burn my boats.

By dint of free confession,
I have banished all repression,
The cupboard's bare, the skeleton is out ;
No more can I pretend
When I cut my oldest friend
That I really do not know what I'm about.

For I've been analysed,
And motives once disguised,
Have now, alas, become an open book ;
Gone crime with all its glory,
Life's quite a different story,
The analyst has got me on a hook.

So if there's anyone
Who thinks it would be fun
To talk for hours to one who's paid to listen,
Consider first the price,
And take the *free* advice
Of a wistful, erstwhile out-and-out Narcissan.

Henceforth you must eschew
All excuses old or new,
And say farewell to irresponsibility,
Essay not to recapture
Crime's first fine careless rapture,
But concentrate on middle-aged utility.

Maintain a state of grace
By reflecting on the Race,
The future is to them and not to you,
Let their synthetic good
In mating or in food,
Become the theme of all you think or do.

And now the least, but last,
Forget about the past,
No longing, lingering looks at childhood's horrors,
So cut the Gordian Knot,
And remember Mrs. Lot,
Have done with all your Sodoms and Gomorrahs.

I hope I've said enough
To deter all but the tough,
This business is no joke, please rest assured,
But if with groans and tears,
You can stick it for three years,
You can count on being killed or being cured ! "

* * *

The compulsory evacuation of the London teaching hospitals has brought to the fore a problem which has worried some of us for a long time. Many members of the staffs of these hospitals have a comparatively slight knowledge of educational methods, and some of them refuse to believe that there is any connexion between the teaching of clinical subjects and university education. In the provinces the problem does not exist to anything like the same extent, for the medical schools there are so intimately linked with the university that they cannot help being imbued with its methods and traditions. But the London teaching hospitals have led a life of proud independence. Though latterly hard economic facts have made them face up to the fact that but for their grant from the University of London their very existence would be problematical, they still adopt the attitude that it is the university which should be proud of its association with their ancient seats of learning.

In the prewar days the organisation of the London teaching hospitals was of little practical importance and capable of a simple solution. The preclinical departments were run quite efficiently as more or less independent units with their own whole-time teachers, and the clinician took little interest in them. As often as not they were practically ignored and comings and goings between hospital and school were few and far between. Again, so far as the clinical side of the teaching was concerned, there was little to worry about. The material in the form of patients was there, the organisation in the form of the hospital authorities was there, and what little organisation seemed necessary from the point of view of the students was considered mere office routine, efficiently looked after by a dean who usually was an occupant of a chair in one of the preclinical departments. Many clinicians were quite cynical about it all—no clinician of repute had time for office work, that was a job for a whole-time professor. Under these circumstances teaching was little trouble to the clinician. He turned up for his rounds or outpatients—part of his statutory duties as a member of the honorary staff—and his clerks or dressers accompanied him, gleaning what facts they could from the great one as he visited or examined his patients. A call to the country of course took precedence, no matter how little warning it might be possible to give to the waiting students. Actually they did not suffer much for there were usually juniors available to take the

place of their chief. With our happy faculty for evading unpleasant issues the question of conflicting loyalties as far as hospital and private practice was concerned never arose, for the latter came first.

The evacuation of the hospitals and medical schools has changed all this. No longer are patients, organisation or juniors supplied with unfailing regularity. No longer are there alternatives to which the students can go if a round is cancelled. Organisation has been necessary, planning has been indicated, awkward questions have had to be faced. What constitutes a medical curriculum? How can the absence of outpatients be compensated for by the use of inpatients? Are medical and surgical lectures essential? If so, how many should be given, what subjects should they cover and who should deliver them? How long should any one student spend in any one hospital? Can students be left for, say, a term in a hospital with ample clinical material but little in the way of teaching? The response of the average clinical teacher to this barrage can only be described as lamentable. There have been notable exceptions and the picture has perhaps been overpainted, but the essentials are true enough to life to be depressing. Alas that such august institutions should be so bankrupt of ideas. Not only the existence of our London medical schools is involved, but the whole future of the medical curriculum. If medical education is to keep pace with the progress of medical science and medical service to the community, reform must be drastic. A whole-time dean, as he exists in many American medical schools, will be needed, for the organisation of a medical school can no longer be left to the whims of consultants fastened into an unstable framework by a part-time dean in his spare moments. We must produce an adequate supply of whole-time deans from among the most able members of the profession—men with experience of clinical work and research and with a flair for administration who will be prepared to give their lives to the absorbing probems of medical education. As a corollary, the clinicians must realise that teaching is as important a part of their life as medical practice and that to conform to the requisite standards they will need to give a much larger part of their time, energies and abilities to the task than many of them do now.

* * *

A fantastic thing happens every month or so in my area which I suppose has its counterpart in every section of the kingdom. Eight or ten commercial competitors, none of whom have military interests, sit round a table to decide which among them or among other competitors not directly represented (at any rate in a voting capacity), should go into the Army. Their choice is guided by the imposition of a quota, an arbitrary number of Army "vacancies" to be filled. Consideration of the needs of the district does not seem to be within the competence of the meeting. The picture is made all the more bizarre when you realise that these men are not only commercial competitors but also professional colleagues; they are in fact medical practitioners.

Doctors by and large seem to take an individualistic view of their relations to society. This is illustrated by the fractional attendances at B.M.A. meetings, and it seems an odd anomaly of war-time planning that the health of the nation should be exposed to the voracious demands of the fighting Services transmitted through the very coarse filter of local medical war committees. So far as can be seen these committees, subject to an occasional appeal to the more balanced central body, are the real and deciding factor in shaping the civilian health services. It is hard to find any other principle in the adoption of this method of medical conscription except perhaps the old one of "set a thief to catch a thief" which was, after all, abandoned by the administration of Sir Robert Peel so far as it concerned the police about 100 years ago. I am not suggesting that the personnel of committees do not try to be honest, but the general practitioner member is qualified neither by experience nor his own interests to make a good job of it. There is no "consumer" advice to the committee, since neither local governments, public-health authorities or insurance committees have a vote.

The Shakespeare Committee was said to be on tour finding out just what the medical needs of the community are. If silence and inconspicuousness be a mark of efficiency its report should be good, though it does not need a committee to show that reception areas need more doctors, that public-health responsibilities increase with war, and that hospital treatment is no more efficacious to soldier patients if the doctor has got a Sam Brown belt.

* * *

A minor revolution gets scant notice these days and it is not surprising that the fall of a distinguished leader and the establishment of a new order have caused no stir in the medical world. The pituitary has always occupied an exalted anatomical position but in recent years its prestige in the endocrine system also has been steadily growing. America's leading brain surgeon honoured it by special study and summed up his views of its importance in the famous phrase "the leader of the endocrine orchestra." And then we came to learn how "the leader" exercised control by this and that tropic factor. The hormonal jigsaw puzzle was all but solved. But now Dr. Cramer (*Bull. N.Y. Acad. Med.* 1941, **17**, 3) comes along to make us start all over again. The pituitary, he says, is not the leader. The endocrine orchestra has no leader. The members know the secret of working together and are a model for any League of Nations. Their bond is simple and is based on one point, not on eight or fourteen points. The One Point is the necessity of keeping the peace, or, if you prefer it in terms of physiology, of keeping the internal environment constant. They know, what the human race has still to learn, that by pulling together they survive; by pulling apart they perish.

SANITARY CONGRESS IN SCOTLAND

Sir Alexander Russell, M.D., whom the Department of Health for Scotland has charged with the organisation of their diphtheria immunisation campaign, at the annual meeting in Glasgow of the Royal Sanitary Association of Scotland said it was ironical that the first national effort to immunise British children against diphtheria should have been postponed until the time of a world-wide war. During 1940 there had been 15,711 notifications compared with an average of 10,000, and the total deaths numbered 676, the highest recorded for many years. During the first quarter of 1941 the epidemic continued but there had been a steep fall in the notifications from April to June. Recent weekly figures were still above average and there was reason to expect that the number of cases might shortly increase, perhaps reaching epidemic numbers during the winter. Analysis of the deaths showed clearly that pre-school children were far the most susceptible, and it was disturbing that of the total immunised 60% were school-children and only 33% pre-school. Immunisation against diphtheria should now take a permanent place in every health officer's annual programme. Sir Alexander Macgregor, M.O.H. for Glasgow, gave a warning that the wave of incidence of diphtheria was not over. He said that half the child population of Glasgow had been immunised but there was a serious need to protect the remainder of the children. Dr. G. V. T. McMichael, M.O.H. for Paisley, suggested that doctors should make it a routine practice to advocate immunisation in every home they visited. He could not see how 75–80% of the children could be immunised without another intensified national propaganda campaign.

Mr. William Cunningham, chief sanitary inspector for Clydebank, said that before the raids they had theorised about emergency measures; in practice they found many of their pre-war deductions were wrong. He was convinced that mutual help was the only way to meet the disorganisation which might be caused by attack. All local authorities would do well to arrange for their public-health departments in an emergency to be augmented from the staffs of other authorities.

Dr. Nora Wattie, senior child welfare M.O. for Glasgow, had been surprised that most children had come through the bombing with so little effect. But the small amount of clinical air-raid shock did not mean that no harmful influence was at work and the evacuation of children was still an urgent problem.

Dr. Frank Main, M.O.H. for Perth, thought that a drastic overhaul of school quarantine for infectious diseases was overdue. Thousands of school attendances were unnecessarily lost each year by the exclusion of contacts, while a child with a severe cold might, and usually did, remain at school to infect the whole class.

Letters to the Editor

NURSING RECONSIDERED

SIR,—Over ten years ago THE LANCET rendered a great public service in setting up a Commission on Nursing. Very little progress has been made since that commission reported because neither nurses nor their employers have been willing to face the problems involved. The title of your leader "Nursing Reconsidered" gives us hope that THE LANCET is still interested in the nursing question.

Many of us have worked for years on projects for a more comprehensive training for the general trained state-registered nurse. We published our scheme in the *Nursing Mirror*, on which you were good enough to comment, because we had come to the conclusion that reorganisation of training would be useless unless carried out as part of a much wider plan to embrace the provision of suitable nursing care for everyone who wants it, including the old, the infirm, and the incurable—all those unfortunate people most inaccurately lumped together under the designation "chronic sick."

Looking at it from another angle we realised that there are thousands of women of all ages who could never be described as the "cream of our public school girls," many indeed who have left and are still leaving school at 14, who have a real liking for nursing and are prepared to do it, if conditions and salary scales are attractive. The majority of these women have neither the aptitude, education, nor ambition to become teachers and administrators, but many have the patience, kindliness, faculty of accurate observation and practical good sense which are the marks of a good nurse. We want to attract these people and give them a first-class training, and then register them and so provide the public with enough nurses.

You rightly wish to protect the title of nurse, but unfortunately it is already debased, for it is given indiscriminately by private individuals and public bodies to trained and untrained alike. We want to end this and to protect the public by registering every woman who makes a living at nursing and to debar from practice all the rest of the nursing miscellany. In our scheme we ask for two types of nurses, Grade 1 and Grade 2, both state-registered, both well trained and excellent in quality. Such a plan will not harm those state-registered nurses present and to come who can add other talents to the common store. There will be ample room in the nursing profession for teachers, leaders and specialists if the public is to get all the nursing and the health teaching it needs.

When the war started an Interdepartmental Committee on Nursing Services was sitting. It had issued an interim report and was accumulating facts, lacking which final judgment on the needs of the nursing profession cannot be made. This committee ceased working when the war started. THE LANCET would do no more than seek the fruition of its own work if it could stimulate a demand for the resuscitation of the Athlone Committee.

Richmond, Surrey. EVELYN C. PEARCE.
G. B. CARTER.

HOME GUARD PROBLEMS

SIR,—In your last issue both Mr. Abel and a Peripatetic correspondent mention what to me appears as the core of the Home Guard problem—viz., the isolation which military necessity will impose on treatment. As administrator of the 1st British Medical Unit to Spain I had in the first months of the Spanish war some experience of improvised hospital work in forward areas where fighting was evolving from guerrilla form towards positional warfare. This leads me to stress a point neglected (or rather, in my view, misrepresented) by Mr. Abel—that of *concealment*. He recommends that "A large notice with the letters H.G. and a red cross should be exhibited in a conspicuous position" so as to mark the casualty collection point. My difficulty (which would be shared by the casualties) is that this distinctive marking would be available to the enemy, who would have a local air superiority in order to be engaging the Home Guard at all. Facing the same opponents in Spain we had to discard all red cross markings, even brassards, as experience showed us that they invited priority of attack by aircraft, artillery and sharpshooters.

Apart from this criticism, which in no way affects the main argument, Mr. Abel's communication demonstrates very clearly that the period during which the Home Guard was considered to be unique amongst fighting units anticipating a casualty rôle of nil (or was it annihilation?) is now ended. As Mr. Abel points out, casualties may have to stay near their units, as evacuation may be a military impossibility. This isolation may well continue for days or even weeks. Their points of concentration then must be equipped to care for them until they can be passed further back, which means that some surgery *must* be done. The scope of this work will in effect be parallel to that of a rural practice 50 years ago. With the help of the district nurse staffing difficulties may be minimised; materials, under present conditions, obviously have to be "scrounged," or at any rate earmarked in advance of the emergency for transit to the point by M.O. (his own surgical kit), district nurse (her armamentarium) and voluntary housewife-nurses (scrounged ward kit).

On the question of nomenclature, it seems to me that the function of the Home Guard first-line casualty service indicates the title "casualty concentration point." "Casualty collecting point" is surely euphemistic if named with reference to any evacuating service and suggests that function is confined to assembly. Manifestly more than this is required.

K. W. C. SINCLAIR-LOUTIT.
M.O. for Civil Defence, Finsbury.

SANATORIUM STAFF

SIR,—Committees may come and committees may go, but a general appreciation of the present difficulties facing those engaged in the treatment of tuberculosis in this country is still long overdue. The tuberculosis system of this country is not merely a useful thing to have around, it is of vital importance to the nation; this is even more evident since the advent of war. At the present moment the sanatoria are not merely dealing with their usual quotas; one's clinical impression is that the number of discovered tuberculous cases is increasing, return cases are on the increase, and furthermore there is every indication that this increase will continue. The actual treatment is not a matter which can be learnt out of a book, nor will the possession of a D.P.H. give any clue to the problem; it is solely the prerogative of experience. Yet at this time invaluable key personnel, and I say key personnel advisedly, are being removed from the staff of various sanatoria on the excuse that they are wanted in the Forces. They are irreplaceable and surely their services are of more use to the nation in the proper place, which is the sanatoria. Their removal is short-sighted policy, and there can be no doubt what section of the community will eventually suffer—the general public.

Royal Chest Hospital, E.C.1. J. A. KENNEDY.

SOLDIERS AT CIVILIAN V.D. CLINICS

SIR,—Will you allow me to reply to the letters of Dr. White and Dr. Erskine in your issue of Sept. 20?

That a man should have been diagnosed gonorrhœa by a civilian specialist and urethritis subsequently by a military specialist has done no harm, so far as I can see, except to the civilian specialist's amour propre. If there is any known method of ensuring that some thousands of medical officers and some tens of thousands of soldiers all obey regulations—and there are regulations about filling up the pro formas—I should be glad to be informed of it. The pro forma was made to fold once and be kept in the paybook; if it is filled up correctly it contains all the information necessary. There is no guarantee that a V. 44, if adopted, would always be filled up correctly and always be sent with the patient when he attended a civil clinic. A soldier's proficiency pay is restored from the date when his C.O., acting on the recommendation of a V.D. specialist, considers he has regained his physical efficiency. The date of his final test of cure therefore should have no effect on the loss of proficiency pay.

Perhaps I did not make myself clear as regards "theorising." What I tried to convey was that it is impracticable, even forbidden, to tell civilian medical officers where a soldier (and his unit) is stationed, where he is going and when. This would entail a great deal of extra work and Hitler might be listening!

It is not suggested that the present scheme is perfect but it was evolved only after much thought and discussion. If Army form I 1247 were sent backwards and forwards each time a man attended a civil clinic the chances of it surviving to reach the War Office, where it is reviewed, would be small. If Dr. Erskine will refer to my letter he will see I did not say there *are* a multiplicity of forms. It must be remembered that the commercial traveller, the actor and the merchant seaman go to a clinic only when they wish. Do they always attend regularly and do they never default? The soldier is *sent*, often unwillingly. It is admitted that in some cases there are gaps in treatment; this is bound to occur in those cases where there are adequate military reasons why a man cannot attend. A soldier suffering from V.D. has direct access to his M.O.; he merely informs a N.C.O. that he wishes to "report sick."

If M.O.'s in charge of civilian V.D. clinics will communicate with me direct in future, or with the Army specialist who treated the case in the first instance, we shall be only too pleased to coöperate to the best of our ability, and I feel sure this method will secure better results than ventilating the matter in the press and casting aspersions on Army methods.

T. E. OSMOND,
War Office. Adviser in Venereal Disease.

FATAL STINGS

SIR,—In his interesting and important account of cases of sudden death following wasp-stings Dr. Dyke discusses the possible explanations of such tragedies. The one he favours is, I think, alone tenable—that the insect happens to puncture a vein in the dermis so that some of its venom enters the circulation directly instead of being "fixed" and destroyed by the skin. I remember many years ago discussing this question with Sir Patrick Laidlaw, to whom I never took a problem without receiving enlightenment or being shown a new angle from which to tackle it. He agreed with me that the above explanation was the only one that covered the facts. These rare cases afford another illustration of the importance of defensive reactions in the skin in protecting the organism from major disasters. Brocq in his "Cliniques Dermatologiques" describes some cases in which this function of the skin is strikingly apparent. Dr. Dyke refers to the experiments of Arthus in which rapid death in dogs was caused by injecting bee-venom intravenously. Injection of the venom intradermally, of course, merely provokes a local reaction in the skin. Another example of the disaster that may follow direct penetration of the skin-barrier is afforded by the rapid development of acute streptococcal septicæmia in surgeons or in those doing autopsies after puncture-wounds as opposed to scratches.

London, W.1. H. W. BARBER.

HAMMER TOE

SIR,—In times like these there is great need of a safe and simple cure for hammer toe which will permit the patient to return to duty with the minimal delay. I suggest that such a cure can be obtained from removal of the proximal phalanx. Wounding of the tendons must be avoided. The expanded extensor tendon soon retracts and the end-result is a slightly shortened toe which retains some movement. Inflammation in the bursa over the bony prominence of the hammer toe subsides after a few days, and the corn which is always present can quickly be removed by using collodion salicylicum (20%) as a corn paint. No other method seems to me to need so short a time off duty and none gives so good a permanent result.

Bradford. NORBERT SCHICK.

JOHANN PETER FRANK

SIR,—The significance of Frank's pioneer work in the development of medical clinics and of public health in general has hardly been overlooked in Germany as completely as you suggest (*Lancet*, Sept. 6, p. 296). Laudatory references to him are to be found in standard handbooks of medical history—e.g., Puschmann's—and in historical introductions to hygiene manuals, apart from the scholarly monographs of Rohlfs (1880), Doll (1910), and K. E. F. Schmitz (*Veröff. MedVerw.* 1917, 6, 496). Frank was, moreover, honoured by medical historians of other nationalities. Thus Garrison writes: "His great work on public hygiene, as covering the whole of man's life from the womb to the tomb—sewerage, water-supply, even school hygiene, sexual hygiene, taxation of bachelors and suitable benches and meals for the children, as well as the ideal of a scientific 'medical police,' really left little for Pettenkofer and the moderns. In the preventive medicine of the future, the name of Frank will loom larger with meanings, for he was himself a true modern." And quite recently Sigerist has published (*Bull. Hist. Med.* Jan. 1941) an oration by Frank, entitled The People's Misery: Mother of Diseases, of which he says: "One hundred and fifty years have passed since Frank delivered his address. A great deal has changed since then, and yet his words still sound incredibly modern."

S. H. DAUKES.

Wellcome Historical Medical Museum, N.W.1.

IMPETIGO CONTAGIOSA AND NEPHRITIS

SIR,—Dr. Hope Simpson (*Lancet*, Sept. 13, p. 328) raises a point about nephritis following impetigo contagiosa which deserves comment. Nephritis as a specific complication of impetigo must, he says, be very rare, whereas albuminuria and anasarca due to sensitivity to ammoniated mercury ointment is not uncommon. Nephritis may at present be a rare complication of impetigo just as it is now a rare sequela of scarlet fever but there are numerous records of "impetigo-nephritis" in the literature (see the recent reviews of Silvers, S. H. *N.Y. St. J. Med.* 1939, **39**, 1093; Futcher, P. H. *Arch. intern. Med.* 1940, **65**, 1192). For example, R. Southby and B. L. Stanton (*Med. J. Aust.* 1926, **1**, 127), in an inquiry about antecedent infection in 103 children with acute nephritis, found that 17 had had impetigo two to six weeks prior to admission to hospital. On the other hand, sensitivity or idiosyncrasy to ammoniated mercury is, according to P. Harper (*J. Pediat.* 1934, **5**, 794), uncommon, and mercurial nephritis following its inunction must, if it occurs at all, be extremely rare, for this mercury compound, being very insoluble, is poorly absorbed.

London, N.W.3. ROBERT CRUICKSHANK.

TRAUMATIC ASPHYXIA

SIR,—Mr. Grant Bonnin writing of traumatic asphyxia (Sept. 20, p. 333) states that no case has been reported showing petechiæ only. I cannot believe that such cases are rare and suggest that they have not been reported as they are thought to be of little interest. I have seen one air-raid casualty with petechiæ of the distribution characteristic of traumatic asphyxia. This is the only case of which I have notes but I have seen the phenomenon in civil injuries. The patient was a boy of 14, who was buried by debris in a shelter as a result of a bomb explosion. I saw him 7 hours after injury. He did not appear to be shocked or seriously hurt; he had petechial hæmorrhages of the eyelids, brow, neck and upper part of chest. None were found in the retinæ. X-ray of his chest showed no abnormality, although for 2 days there were signs suggesting consolidation at the right base. He did not spit blood. His petechiæ faded rapidly and were gone in a week. The exact nature of the injury was not determined. The boy had not lost consciousness and said that he was rescued quickly.

Leavesden Hospital. ROBIN PILCHER.

SIR,—The article by Mr. Grant Bonnin recalls an interesting case of traumatic asphyxia which I saw 5 weeks ago. A young woman had an epileptic attack and came under my care the same day. She had subconjunctival hæmorrhages, "total" on the right side, but incomplete on the left. Her face and neck were a vivid cyanotic hue. She was wearing collar and tie at the time of the attack, and the discoloration stopped abruptly at the level of a constriction mark caused by the collar. There was no discoloration below this level. I was able to observe her for 3 days, during which time the high colour definitely faded, and also became rather more red than blue. It is suggested that the epileptic spasm caused venous congestion with swelling of the neck, and that the tight collar then caused further congestion sufficient to produce the appearance described above the constricting band.

Lowestoft. E. E. T. TAYLOR.

SPLENECTOMY IN ICTERUS GRAVIS

SIR,—The paper by Hardwick and Lloyd in your issue of Sept. 20 will have been read with interest by pædiatricians. Recovery in this case does not justify the assumption that splenectomy is of any value in the treatment of this disease. The operation was practised for a short time in the United States, but this treatment is now regarded as irrational. It is generally accepted that the splenomegaly is a reaction to the disease rather than the cause. In the last few years I have observed about fifty cases of erythroblastosis of which icterus gravis is the commonest clinical type. Many were closely studied from the time of birth in a maternity hospital. Spontaneous recovery often occurs and the recognised sequelæ are exceptional. I have recorded several cases (*Trans. Edinb. obstetr. Soc.* 1939, p. 63), and have since seen a number of others, in which a very active reticulocytosis and rapid rise of hæmoglobin occurred without any treatment. So long as the ætiology remains obscure, blood transfusion is likely to remain the therapeutic mainstay. The object of blood transfusion is to maintain the hæmoglobin at a safe level until the rate of regeneration outstrips that of hæmolysis. Definite blood coagulability with hæmorrhagic signs often occurs in severe cases of the disease and can be efficiently treated by the administration of vitamin K.

J. L. HENDERSON.

Dept. of Child Life and Health, Edinburgh.

WAR-TIME BEHAVIOUR

SIR,—The Mental Health Emergency Committee has been making an inquiry into the behaviour of children and adults under war conditions. Questionnaires have been sent out to child guidance clinics, mental treatment clinics, psychiatric wards of emergency hospitals, and to psychiatric social workers in reception areas. This inquiry was intended to be only a preliminary survey and before proceeding further the committee would be much interested to learn whether any similar investigations are being carried out, either by groups or by individuals, and if so would welcome opportunities of coöperation.

Mental Health Emergency Committee,
24, Buckingham Palace Road, S.W.1.

EVELYN FOX,
Hon. Secretary.

Public Health

From the School Reports

HOLLAND (LINCS)

Dr. W. G. Booth throws some light on the cost of the school medical service in a small county. The number of school-children on the roll at the end of 1940 was 10,180, and the net cost of their medical service was £5202, or 10*s.* a head per annum. The Board of Education grants supplied £3282, the remainder came from the rates and absorbed 2*d.* out of the general elementary-education rate of 4*s.*

The use of paper towels was continued in some schools, and it was hoped to extend this system throughout the county, but that is of course impossible at present. In view of the increasing prevalence of scabies this is unfortunate, for the communal school towel is open to suspicion of spreading the acarus. Mr. C. A. Johnston, senior school dentist, calls attention to the very bad state of the mouths of school entrants. Caries of the temporary teeth seems to be increasing in spite of the undoubted improvement in the general nutrition of children and of expectant mothers.

KETTERING

The average number of children on the school registers in 1940 was 4119 and the number of received children who remained in the borough at the end of the year was 2863. The ebb and flow of the evacuated population, most of which came from London, is interesting. There was a steady reduction from 2533 in January to 1434 in August, the number doubled in September, and in October reached 4397. It has not been fully realised how great is the strain of this fluctuation on billeting and education in reception areas. During the year 112 children were admitted to hostels because they were unfit for billeting. Of these 26 were taken home by their parents and 65 were returned to billets because they were cured. Dr. Cecil Hogg, in his school report, gives some information on unsatisfactory evacuees which will be useful in the future, for evacuation has given us the only chance we have ever had to find out the number of objectionable children, what percentage of them can be cured and how long it will take to cure them.

Infectious Disease in England and Wales

WEEK ENDED SEPT. 20

Notifications.—The following cases of infectious disease were notified during the week: smallpox 0; scarlet fever, 1140; whooping-cough, 2289; diphtheria, 957; paratyphoid, 125; typhoid, 27; measles (excluding rubella), 612; pneumonia (primary or influenzal), 434; puerperal pyrexia, 134; cerebrospinal fever, 121; poliomyelitis, 28; polio-encephalitis, 3; encephalitis lethargica, 6; dysentery, 102; ophthalmia neonatorum, 76. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept. 17 was 1266; including scarlet fever, 129; diphtheria, 252; measles, 28; whooping-cough, 571; enteritis, 22; chicken-pox, 24; erysipelas, 20; mumps, 6; poliomyelitis, 2; dysentery, 14; cerebrospinal fever, 21; puerperal sepsis, 12; enteric fevers, 45; german measles, 3; malaria, 1; polio-encephalitis, 2; other diseases (non-infectious), 44; not yet diagnosed, 75.

Deaths.—In 126 great towns there were no deaths from enteric fever, 1 (0) from measles, 1 (0) from scarlet fever, 14 (1) from whooping-cough, 23 (1) from diphtheria, 38 (1) from diarrhœa and enteritis under 2 years, and 8 (0) from influenza. The figures in parentheses are those for London itself.

Birmingham reported 9 deaths from diarrhœa. There were 3 fatal cases of diphtheria at Liverpool.

The number of stillbirths notified during the week was 170 (corresponding to a rate of 32 per thousand total births), including 14 in London.

Obituary

ROBERT THIN

M.B., LL.D. EDIN., F.R.C.P.E.

Dr. Thin who died at Stow on Sept. 18 in his 81st year had spent the greater part of his professional life in general practice in Edinburgh where his energy and kindly disposition earned him the esteem and admiration of colleagues and patients. For fifty years he was associated with the Royal College of Physicians, becoming president 1931–33 when the LL.D. Edin. was conferred on him. After qualifying in 1887 and working in the Royal Infirmary and Maternity Hospital he went to Vienna and Prague studying diseases of the ear, nose and throat and the use of obstetrical forceps. Then as assistant to Dr. George Hunter of Linlithgow he lived in South Queensferry where he was assistant surgeon to the Forth Bridge works during the period of erection. Later his practice became very large and he did not find much time for writing, but he recorded in the *Edinburgh Medical Journal* a study of five generations of familial cysteinuria. He was a lively member of the Old Edinburgh Club and his antiquarian interest found expression in "The Old Infirmary and Earlier Hospitals" and "Medical Quacks of the Eighteenth Century," while at the request of his college he wrote biographical sketches for the portraits hung on the college walls. He carried his own years lightly and continued in practice until a few weeks of his death.

WILLIAM NEIL CAMPBELL

M.D. EDIN., M.R.C.P.E.

THE death of Dr. Neil Campbell is announced from Africa where he was serving with the South African Forces. Dr. Campbell graduated in Edinburgh in 1927, taking the M.D. in 1939. After a house appointment at the Royal Infirmary he went out to Natal and set up in practice at Durban where his ability was recognised by his election to the staff of the King Edward Hospital, Durban. During his student days he was a keen angler and athlete with a good record at rugby and field athletics. He leaves a widow and two young children.

WORLD ORDER AT THE BRITISH ASSOCIATION

A CONFERENCE on Science and World Order was held in London (Sept. 26–28) by this newly formed division of the British Association for the Advancement of Science. The six sessions considered, in order, the relations of science to government, human needs, world planning, technological advance, post-war relief and the world mind, under the respective guidance as chairman of Sir Richard Gregory (president), the American Ambassador, the Soviet Ambassador, the President of Czechoslovakia, the Chinese Ambassador and Mr. H. G. Wells. Much attention has been given in the press to the conference and to the Declaration of Scientific Principles with which it ended and it will suffice to mention the salient points discussed and those aspects particularly relating to medicine.

Scientific contributions were conspicuous by their absence and this was inevitable in a meeting designed to bring together men of affairs and men of science and to impress on the former the contribution which the latter can make to problems of government. The conference brought to fruition a conviction held by Sir Richard Gregory, as one speaker said, "for some 70 or 80 years" and from that point of view was eminently successful. Summing up the views expressed at the meeting Dr. JULIAN HUXLEY emphasised the agreement on the practical importance of science as a means of implementing human progress. Science had an overwhelmingly important part to play in post-war reconstruction; but it must be free and it must be international, and not merely on a national basis. Though it was not much good planning if we did not win the war, it was not much good winning the war if we did not plan, and plan now. An international reconstruction committee should bring together governments and scientists. Standards are now scientific and optimal, for example in nutrition, and the distinction between need and want was now clearly realised. Planned development was best but it must be preceded by surveys. Science must be preventive and the education of both children and adults in science needed reconsideration. The pooling of knowledge and the narrowing of the gap between the birth of an idea and its execution was going on but going on too slowly.

Undoubtedly the contribution by Sir JOHN ORR deserves first mention. Whilst he said nothing which was not well understood by every doctor and social worker, he said it so clearly and persuasively that a deep impression was made. Human needs in nutrition are now known, three authoritative investigations—by the British Medical Association, by the League of Nations, and in the United States—having all reached approximately the same conclusions. Forty to fifty per cent. of the population in the United Kingdom and the United States did not enjoy such optimal nutrition. The connexion between health and diet was well proved and numerous field experiments had shown the benefit to the health of mothers, infants, school-children and recruits, of adequate diets. The enormous improvement in the public health of this country since 1914 was correlated with a fifty per-cent. increase in the consumption of protective foods. Yet the lamentable folly of restriction and even the destruction of foodstuffs had been widely indulged in. The war had forced upon us a policy of feeding according to need and not according to profit. A world food policy could and should be worked out now and he thought the food interests would coöperate if they were asked. Many other speakers however felt that a scientifically planned economy was impossible on a capitalist basis.

On the use of scientists by the Government in the war effort divergent views were expressed. Lord SAMUEL described the scientific advisory committees which had been set up by the Government, but Prof. J. B. S. HALDANE said that though he had done work for the three Service departments he had not made contact with any of these committees and his colleagues "though perhaps better scientists were probably less pushful than himself." His remarks on the tragic failure of the Government to use scientific workers to the full were endorsed by Dr. J. E. D. SWANN. Among contributions to post-war planning, Lord HAILEY described the vital need for it in the future development of our African colonies. As regards health the general public might not be able to distinguish between the advantages of direct and indirect rule but at least they could appreciate that a district as large as Yorkshire was served by one doctor and two dispensaries, and that huge districts had no domestic animals whatever because of sleeping sickness. There was need for far more international conferences for combined planning in Africa. Sir JOHN RUSSELL made several practical suggestions for conserving now essential breeding stocks of cattle, grain and fruit trees necessary for the reconstruction of Russia's "scorched earth," and Mme. PRIESTMAN-BREAL warned us most charmingly against psychological traps, such as the assumption of superiority, in distributing post-war relief. Mr. RICHARD ALLEN of the American Red Cross described the urgent need to build up reserves of medical equipment to replace those taken by the Germans from the occupied countries. Dr. HUGH SMITH of the Rockefeller Institute also emphasised the need for a concrete plan to be worked out now to prevent the post-war spread of epidemics; this should include plans for an international health organisation. He quoted Surgeon-General Parran's remark "that there must be no property qualification for health." Other speakers urged that we must take the risk of being generous after the war and Mr. PHILIP NOEL BAKER hoped that what would necessarily be the greatest act of charity the world has ever known would lead to permanent and not transient results as after the last war. A world food policy would be of incalculable value as a stabilising factor in economics. The general impression left on an observer was that if the politicians and the public would allow scientists to "do their stuff," there might be much hope for the post-war world.

The conference approved the plan of the council for setting up immediately small committees to work out in detail the main suggestions put forward at the meeting.

Panel Practice

COSTLY OR EXPERIMENTAL TREATMENT

X, on Dr. A.'s list, was attended by his assistant, Dr. B. In September, 1940, Dr. B. sent X to a consultant who diagnosed myasthenia gravis and suggested Prostigmin and Fertilol (wheat germ oil) capsules. Thereupon Dr. B. wrote a private prescription and instructed X to purchase prostigmin, for injection and oral administration, telling X that he was not able to issue insurance prescriptions as the drugs in question were not included in the National Health Insurance prescribing list. Dr. B. himself visited a local chemist with reference to the supply of prostigmin, a drug which he said was previously unknown to the manager, and left with him a leaflet issued by the manufacturers. In October Dr. B. wrote to the chemist, asking him to order a concentrated solution for injections and to obtain a supply of the tablets. For these X paid £20 4*s.* 6*d.* between October, 1940, and April, 1941. In April X purchased, again on the instructions of Dr. B, 400 capsules of another preparation costing £3 8*s.* bringing up his total expenditure before communicating with the local insurance committee to £23 12*s.* 6*d.* Dr. A., questioned by the committee, said that neither the prostigmin nor the vitamin E could properly have been ordered at the cost of the chemists' account for the reason that the treatment was experimental. The medical service subcommittee took the view that the drugs were requisite to a method of treatment recommended by the consultant, which method of treatment was in fact adopted (as it need not have been) by Dr. B. Where, the committee ruled, an insurance practitioner decides (presumably after due consideration of all the circumstances, medical and otherwise) to prescribe a particular drug he would not be justified in ordering that drug except at the expense of medical benefit funds. The insurance committee decided to recover from Dr. A. the amount of £23 12*s.* 6*d.* with which to reimburse the insured person, but they have applied for the Minister's approval to pay Dr. A. from the practitioners' drugs account the sum of £18 5*s.*, being the cost at tariff rates plus dispensing fees of the drugs which were administered.

In this case the issue was not primarily one of expense. It must by now be common knowledge that an insured person is entitled, under the provisions of the N.H.I. Acts, free of cost, to such proper and sufficient drugs as are requisite for his treatment. The doctor providing this treatment must, in the first instance, be the judge what drugs are proper and sufficient, and his discretion is limited only by the fact that he may be asked to satisfy the panel committee that he has not prescribed medicines in excess of what is reasonably necessary for adequate treatment. No particular drug, therefore, can be prohibited on the ground of its cost. The question is not whether the drug ordered was costly, but whether it was unnecessarily costly, that is, whether a preparation of equal therapeutic value could have been ordered at less cost. This criterion applies to proprietary medicines as well as to officinal medicines and it is extremely unlikely that a practitioner acting on advice from a consultant would run any risk of surcharge merely because the preparation advised was costly. Obviously too a practitioner having obtained advice from a consultant cannot say "This treatment is too expensive for a panel patient, but I am prepared to administer it if the patient pays for the medicament." Instances have often been given of expensive preparations which have been prescribed quite properly for insured patients. An antipneumococcal serum cost £20; an insured person took for several years (sometimes 4 or 5 times a month) a preparation of suprarenal cortex, costing some £2 7*s.* a time. No question was raised as to the propriety of this prescribing. Many preparations of ovarian hormones are now prescribed for insured patients and these, as practitioners are well aware, are costly.

Appointments

BRADSHAW, D. B., M.B. Dubl., D.P.H.: deputy M.O.H. for South Shields.

GREGORY, J. L., M.B. Glasg., F.R.F.P.S., D.P.H., D.T.M. & H.: M.O.H. for south-west Salop united districts.

MARSHALL, D. V., M.B. Glasg., F.R.C.S.E., F.R.F.P.S.: medical superintendent at the new municipal hospital at York.

WISE, C. S., M.B. Lond.: examining factory surgeon for Sandwich, Kent.

Births, Marriages and Deaths

BIRTHS

KING.—On Sept. 21, at Sutton, the wife of Major Cecil King, R.A.M.C.—a son.

LLOYD-HART.—On Sept. 23, in London, the wife of Dr. V. E. Lloyd-Hart—a daughter.

LUNT.—On Sept. 22, at Witney, the wife of Captain H. R. W. Lunt, R.A.M.C.—a son.

PEYTON.—On Sept. 22, at Ilfracombe, the wife of Captain H. N. Peyton, R.A.M.C.—a daughter.

SANDERSON.—On Sept. 21, at Horncastle, Lincs, the wife of Dr. G. H. Sanderson—a son.

WALLACE.—On Sept. 22, at Clifton Hampden, Abingdon, Berks, the wife of Dr. W. Herschel Scott Wallace—a son.

MARRIAGES

BLOWERS—HOCKEY.—On Sept. 18, at Weymouth, Robert Blowers M.R.C.S., lieutenant, R.A.M.C., to Eva Gethin Hockey.

BURGESS—WHARRIE.—On Sept. 20, at Chislehurst, David Burgess, M.R.C.S., of Hemel Hempstead, to Patricia Wharrie, of Chislehurst.

COLLIN DAVIES—ROBERTS.—On Sept. 24, at Bryn-y-Maen, Colwyn Bay, Hugh Collin Davies, M.D., of Ruthin, to Anne Roberts.

MCDONNELL—FOLEY.—On Sept. 24, in Dublin, Colm Angus McDonnell, M.D., to Margaret Mary Foley.

MARSHALL—CRYMBLE.—On Sept. 23, at Belfast, Robert William Stanley Marshall, M.B., R.A.F.V.R., to Hilary Crymble, M.B.

PITT—CECIL.—On Sept. 27, at Sway, Hants, George Heriot Pitt, F.R.C.S., to Margaret Mary Cecil.

WYNNE WILLSON—HAMERSLEY.—On Sept. 20, at Milford-on-Sea, William Wynne Willson, B.M., captain, R.A.M.C., to Pamela Hamersley.

DEATHS

BETTS.—On Sept. 22, Leonard Bowring Betts, M.R.C.S., of Cleverdon House, Bradworthy.

HICKS.—On Sept. 26, at Frinton, Essex, Thomas William Hicks, M.B.E., M.D. Lond., J.P.

JOHN.—On Sept. 28, at Ogbourne, Wilts, David William John, M.C., B.A. Camb., M.R.C.S., late major, R.A.M.C., of Bridgend, Glam, aged 52.

Notes, Comments and Abstracts

PEP LOOKS AT EMS

THE Emergency Medical Service, as its name suggests, was created as a temporary makeshift, but like many of our improvisations it may casually develop into a permanent part of our social structure, and this possibility adds importance to PEP's new broadsheet [1] on hospitals in war-time. This clear and objective review reminds us of the present scope of the E.M.S. With 225,000 beds, 1700 full-time doctors and another 5150 on call, it is costing the Government—and us—nearly £16 million a year. The E.M.S. has pooled our medical personnel and equipment, has given us planned distribution of medical care and provided special services throughout the country. In many remote districts general practitioners have been stimulated by contact with metropolitan colleagues, and a mass of otherwise scattered clinical material has been made available to the research worker. The upgrading of many smaller hospitals and the new hutted buildings are a lasting and valuable addition to our hospital services. Municipal and voluntary hospital staffs have come to know and appreciate each other, and the implications of medical coöperation have been made manifest. So much for the credit side. Against these achievements PEP sets an administration which is clumsy and often unworthy of its personnel. Its system of accounts is unbearably complex, and it suffers from a diarrhœa of memoranda. The Ministry of Health has delegated wide powers to its regional officers, but in practice, PEP thinks, does not encourage their use. The selection of key officers has not always been wise. The hospital officers, drawn from the Ministry of Health permanent staff, have not always had the necessary initiative and administrative experience. The London sectors, often illogically distorted to fit round the big voluntary hospitals, have tended to work as over-independent units. PEP pleads for administrative capacity rather than medical eminence as a criterion for selection of group officers.

If the E.M.S. is to become a national service PEP would like to see the present curious anomalies of who is and who is not eligible for treatment swept away. Beds would instead be open to all, and there might well be a national hospital contributory fund incorporating all existing voluntary funds. Outpatient departments and specialist clinics, to which the general practitioner could refer his patients, should be opened in crowded reception areas, and here doctors from the E.M.S. and armed forces who were not fully occupied, might serve. Pædiatric services at base hospitals—similar to those provided in the London sectors—should be set up elsewhere, and tuberculous patients be given priority for admission to hospitals. The courses for E.M.S. doctors at special clinics might be extended. PEP thinks that our shortage of doctors is mostly due to maldistribution and suggests that the Central Medical War Committee should become a War Medical Service Committee, working through regional committees who would have the right to move private practitioners to areas where they were most needed.

The broadsheet welcomes the spate of interest which doctors and nurses are showing today in what they feel to be the inevitable reorganisation of their professions. So far regionalisation is the only generally accepted principle, and PEP, while acknowledging the fine work the Nuffield Hospitals Trust has done in this direction, would like to see more stress laid on unification rather than on the mere coördination of existing systems. The broadsheet points out the danger of regionalising a part of the medical services without regard to the health services as a whole, and reiterates the view, set out in the PEP report on British Health Services, that it is the consuming public which will pass final judgment on all these plans.

1. Planning No. 177. Obtainable from PEP, 16, Queen Anne's Gate, London, S.W.1.

FOURTH ADDENDUM TO THE B.P. 1932.—The latest addendum, reviewed in THE LANCET of Sept. 6 (p. 290), is now obtainable, and became official on Oct. 1.

ABORTION RATES IN STOCKHOLM

FIGURES relating to illegally induced abortion are not easily come by in this country. An analysis of 800 cases treated at the Sabbatsberg Hospital, Stockholm, from 1935 to 1937 throws light on the fundamental causes of the practice. The investigation, reported by Dr. G. Inghe and Dr. G. A. Jonsson,[1] showed abortion to be much commoner among unmarried than married women, as might be expected. Among unmarried women the rate reaches a maximum between the ages of 25 and 30; in married women it rises with age. Figures collected from public hospitals showed that pregnancy in unmarried women resulted in birth of the child at term and eventual marriage of the parents in a third of the cases, illegitimate births in a third and abortion in a third. Many cases of illegal abortion, however, do not reach hospital, and the practice is estimated to be more common than pregnancy going to term among unmarried women. About a third of the 800 cases admitted to having attempted to procure abortion, usually medicinally. Most of the mothers were working women earning comparatively small wages—waitresses, kitchen hands, hairdressers and shop assistants. Of the married women, those with several children and coming from overcrowded houses were more numerous than those with one or two. Most of them had used contraceptives, but seldom selected the most reliable or used them regularly. Many of those who knew of reliable contraceptives had not used them because of distaste, or because they grudged the inconvenience. About half the 800 women were married, or living as married, and most of the rest had regular sexual intercourse; intercourse was occasional in only 7%. Most of the unmarried women had sought abortion on economic grounds. Poverty and unemployment had delayed marriage for some, and others doubted whether they would be able to support their children. Nearly half feared the social criticism which birth of an illegitimate child would provoke, and two-thirds dreaded the anger of their parents. Only a third of the whole series had any idea that induction of abortion was attended with risk. Among the married women, 75% gave economic reasons for their action, 10% considered themselves to be too much exhausted to have more children and 40% wished to space their children; 20% feared the inheritance of some abnormality by the child, or were influenced by memories of an unhappy childhood. Dr. Gårdlund, in his experience of practice in Stockholm, found that requests for abortion increased year by year. Some years ago he received 170–190 requests of the kind yearly, but in 1937 the figure rose to 266, in 1939 to 278, and in 1940 to 410. Among these the cases in which he could legally undertake abortion amounted to 7 or 8 a year.

"WHO WALK ALONE"

Dr. Perry Burgess, president of the American Leprosy Foundation, has taken the history of a young American soldier who developed leprosy after service in the Spanish-American war in the Philippines, and told it in autobiographical form (London: J. M. Dent and Sons. Pp. 318. 12*s.* 6*d.*). His reconstruction of the emotional experience of this unfortunate young man from the facts given him during many intimate years have such verisimilitude that it is difficult to credit they were not indeed his own. It shows, moreover, that the author possesses that inward sight which is the mark of the true artist, and while the tale is told in factual style the psychological element is never forgotten. Nine years after the young man's return from the Philippines to America he developed leprosy, and a year afterwards was sent out to the Leper Colony on the Island of Culion in the Philippines. There he started another stage of his painful spiritual pilgrimage. Slowly he determined to make the best of a world that had suddenly shrunk to the cramping confines of a leprosarium. He made his house and garden the most beautiful in the colony and gradually became interested more and more in his fellow sufferers. He organised work schemes, and received the hearty coöperation of both authorities and patients. All the time he grew in spiritual stature, and his record should be put amongst the many others of those who have achieved nobility through suffering. Despite the horror which leprosy, above all other diseases, seems to inspire, this book is not gloomy but vital and lively. The story reveals the mind of the incurable with an uncommon vividness, and though it is a story it is authentic.

1. *Nord. Med.* March 8, 1941, p. 725.

INDEX OF FOOD INVESTIGATION.—The fascicle dated March 1941 (vol. 12, no. 4) contains 545 items, varying from brief abstract to a mere mention of articles on every aspect of food investigation which have appeared in Empire and American journals. The foreign references are few and old. Food investigation has been quickened by war conditions (this issue alone reveals 650 workers) and an index to the literature is essential to codify results and prevent overlapping. From H.M. Stationery Office. 4*s.* 6*d.*

Medical News

University of Sheffield

At recent examinations the following were successful:—

FINAL EXAMINATION FOR M.B., CH.B.

Parts II and III.—Hazem Barrada, Pauline M. Hardcastle, Labib Ishak, L. F. Q. Maclaine, and Margaret E. Withers.

Medical Honours

The following honours have lately been awarded:—

O.B.E.—Acting Wing-Commander J. P. Huins, M.R.C.S., and Acting Squadron-Leader B. C. Curwood, M.B. Birm.

D.S.C.—Temp. Surgeon Lieutenant A. G. Reid, M.B. Aberd., R.N.V.R., H.M.S. *Mashona.*

Medical Prisoners of War

The following R.A.M.C. officers have been posted as prisoners of war: Captain A. G. V. Aldridge, M.B. Camb.; Temp. Major Robert Harvey, F.R.C.S.E.; Temp. Major P. D. C. Kinmont, M.B. Lond.; and Temp. Major G. A. W. Neill, M.D. Belf.

War-time Nurseries

On Oct. 29 the Nursery School Association of Great Britain will meet in consultation with the National Society of Day Nurseries at the Royal Institute of British Architects. Lord Horder will take the chair at 10.30 A.M., and other speakers who will discuss problems of establishing war-time nurseries will be Miss Florence Horsburgh, Mr. J. C. Wrigley and Miss Zoe Puxley (Ministry of Health), Miss Greaves (Board of Education), Lady Reading (N.S.D.N.), Dr. G. H. Hogben (M.O.H. for Tottenham), Lady Allen of Hurtwood and Miss Freda Hawtrey (N.S.A.). Further information may be had from the secretary of the association, 8, Endsleigh Gardens, London, W.C.1.

Royal Society of Medicine

A meeting of the clinical section of this society will be held at the Westminster Hospital on Friday, Oct. 10, at 2.15 P.M. The section of orthopædics will meet at Horton Hospital, Epsom, on Oct. 11, at 2 P.M., when short papers will be read and there will be a demonstration of special cases.

Society of Medical Officers of Health

Sir Alexander Macgregor of Glasgow has taken office as president of this society in succession to Dr. F. T. H. Wood of Bootle.

London Homœopathic Hospital

On Thursday, Oct. 9, at 2.30 P.M., Dr. Thomas Stonham will give a lecture introducing the autumn and winter post-graduate session at this hospital. From October to May, on Mondays and Thursdays, at 2.30 P.M., Dr. Charles Wheeler will give a course on homœopathic materia medica and therapeutics, and from October to December, on Fridays at 2.30 P.M., Sir John Weir will give ten Compton Burnett lectures on homœopathic philosophy and prescribing. Tutorial classes and clinical tutorials will also be held throughout the session.

Queen's Nurses

During 1940 the Queen's nurses and village nurse midwives attended 85,242 confinements for which no doctor was engaged, and they also acted as maternity nurse for 36,560 cases for which doctors were engaged. There are now 1530 Queen's nurses and 2782 village nurse midwives, making 4312 in all. This is a decrease of 72 which is said to be due to the reorganisation of the associations and to less work in some coastal areas.